Vol. 918 Number 3

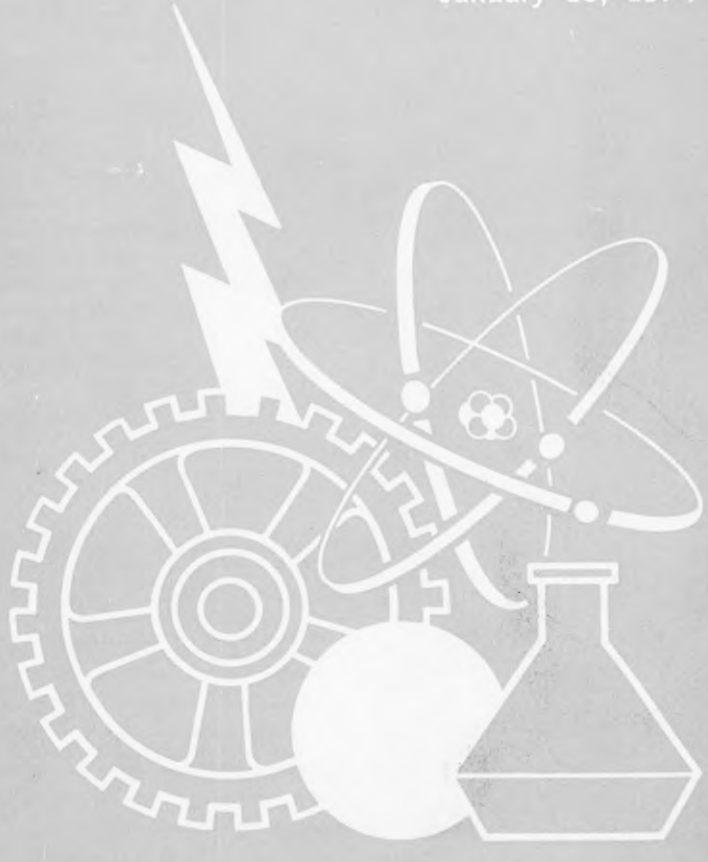
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

January 15, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 15, 1974 Volume 918 Number 3

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PATENT NOTICES

Certificates of Correction for the Week of Jan. 15, 1974

D. 227,903	3,726,761	3,754,715	3,759,807
3,529,441	3,730,746	3,755,072	3,761,110
3,577,168	3,737,334	3,755,348	3,761,750
3,627,515	3,740,135	3,755,563	3,761,871
3,658,905	3,741,861	3,756,183	3,761,972
3,676,252	3,742,291	3,756,556	3,762,290
3,676,560	3,743,674	3,756,572	3,762,535
3,678,157	3,744,070	3,756,771	3,762,670
3,687,997	3,745,150	3,756,798	3,762,825
3,694,637	3,746,765	3,757,164	3,762,958
3,696,254	3,747,743	3,757,237	3,763,199
3,705,748	3,751,201	3,758,089	3,765,214
3,709,668	3,751,595	3,758,388	3,765,790
3,719,722	3,751,637	3,758,563	
3,723,518	3,753,110	3,758,971	
3,725,871	3,753,212	3,759,751	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

Patent 3,766,020. Steam Jet Ejectors To Reduce Pressure in and Produce Stripping Steam for Deaerator. Filed Oct. 27, 1971. Patented Oct. 16, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,489,318. Buoyancy System. Filed Dec. 11, 1967. Patented Jan. 13, 1970. Not available NTIS.

Patent 3,489,591. Method of Making Radiation Resistant Fabric. Filed Feb. 16, 1967. Patented Jan. 13, 1970. Not available NTIS.

Patent 3,489,988. In-Line Cable Connectors. Filed Sept. 22, 1967. Patented Jan. 13, 1970. Not available NTIS.

Patent 3,490,230. Combustion Air Control Shutter. Filed Mar. 22, 1968. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,490,268. Nondestructive Testing of Hull Stiffeners. Filed Jan. 22, 1968. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,490,924. Method of Electroless Nickel Plating and Plating Baths Therefor. Filed May 13, 1966. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,491,027. Composition and Method for Cleaning Salt Residues From Metal Surfaces. Filed Feb. 28, 1966. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,491,355. Automatic Data Sequencer. Filed Jan. 24, 1966. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,491,358. Atmospheric Turbulence Detection System. Filed Feb. 2, 1968. Patented Jan. 20, 1970. Not available NTIS.

Patent 3,492,149. Surface Modified Hard Inorganic Solid and Method of Making Same. Filed Oct. 31, 1967. Patented Jan. 27, 1970. Not available NTIS.

Patent 3,492,150. Surface Modified Hard Inorganic Solid and Method of Making Same. Filed Oct. 31, 1967. Patented Jan. 27, 1970. Not available NTIS.

Patent 3,493,220. Furnace for Treating Material in a Gas Atmosphere. Filed Mar. 7, 1968. Patented Feb. 3, 1970. Not available NTIS.

Patent 3,495,158. Harmonic Generator System. Filed May 23, 1968. Patented Feb. 10, 1970. Not available NTIS.

Patent 3,496,609. Universal Vulcanizing Mold. Filed Oct. 3, 1967. Patented Feb. 24, 1970. Not available NTIS.

Patent 3,496,906. Day/Night Bidirectional Marine Marker. Filed Feb. 2, 1968. Patented Feb. 24, 1970. Not available NTIS.

Patent 3,497,312. Atmosphere Regeneration Method for Closed Environmental Vehicles. Filed Jan. 23, 1964. Patented Feb. 24, 1970. Not available NTIS.

Patent 3,497,393. Sea Water Activated Battery. Filed Aug. 3, 1967. Patented Feb. 24, 1970. Not available NTIS.

Patent 3,497,846. Magnetic Anchor for Curved and Irregular Surfaces. Filed Dec. 27, 1967. Patented Feb. 24, 1970. Not available NTIS.

Patent 3,497,889. Inflatable Life Preserver. Filed Mar. 21, 1968. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,497,962. Method and Means for Minimizing Horizontal Accelerations in Ship-Board Vertical Pendula. Filed Nov. 6, 1967. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,497,962. Method and Means for Minimizing Horizontal Accelerations in Ship-Board Vertical Pendula. Filed Nov. 6, 1967. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,498,112. Microwave System for Determining Water Content in Fuel Oil. Filed Apr. 30, 1968. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,498,124. Apparatus for Measuring Tension in a Running Line of Magnetic Material. Filed Dec. 26, 1967. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,498,768. Rust-Inhibitive Abrasive Blasting. Filed Oct. 18, 1967. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,498,922. Method of Displacing Liquid Organic Films From Solid Surfaces. Filed Oct. 18, 1966. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,498,923. Surface-Active Compositions and Method for Displacing Liquid Organic Films from Solid Surfaces. Filed Oct. 18, 1966. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,499,058. Mixture of Two Polyesters With Pyromellitic Dianhydride. Filed Apr. 22, 1966. Patented Mar. 3, 1970. Not available NTIS.

Patent 3,499,240. Illuminated Grid for Backlighted Plotting Boards. Filed Feb. 21, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,499,315. Contamination Determination in a Fluid System. Filed Aug. 31, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,500,067. Symmetrical Waveform Rate-of-Rise Clipper Amplifier. Filed July 11, 1966. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,500,191. Microcircuit Test Probe With Grappler. Filed Dec. 7, 1967. Patented Mar. 10, 1970. Not available NTIS.

Patent 3,512,493. Adjustable Buoyancy Lift Device. Filed Apr. 23, 1968. Patented May 19, 1970. Not available NTIS.

Patent 3,520,218. Transistor Cap Remover. Filed Apr. 10, 1968. Patented July 14, 1970. Not available NTIS.

Patent 3,521,443. Hook for Cargo Tie-Down. Filed May 23, 1968. Patented July 21, 1970. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 174,684. Stored Charged Device. Filed Aug. 25, 1971. PC $3.50/MF $1.45.

Patent application 177,985. Recorder/Processor Apparatus. Filed Sept. 7, 1971. PC $4.75/MF $1.45.

Patent application 187,143. Laser Beam Intensity Control for Thermomagnetic Recording and Magneto Optic Playback Systems. Filed Oct. 6, 1971. PC $3.50/MF $1.45.

Patent application 380,468. Deep Trap, Laser Activated Image Converting System. Filed Aug. 22, 1973. PC $3/MF $1.45.

Patent application 389,929. Digital Phase Locked Loop. Filed Aug. 20, 1973. PC $3.25/MF $1.45.

Patent application 394,898. Dual Cycle Aircraft Turbine Engine. Filed Sept. 6, 1973. PC $3/MF $1.45.

Patent 3,394,286. Ultrahigh Vacuum Measuring Ionization Gauge. Patented July 23, 1968. Not available NTIS.

[FR Doc. 73–26622; Filed 12–18–73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 22, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo, Sulfur; Misc. Esters, Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-12-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-01-72[2]
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring	1-15-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-17-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-08-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters, Stationery; Information Dissemination	3-02-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors: Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-12-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes, Sewing Machines.	9-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during December 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... **Numbers 2,772,415 to 2,775,761, inclusive**
Plant Patents ..... **Numbers 1,532 to 1,542, inclusive**

REISSUES

JANUARY 15, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

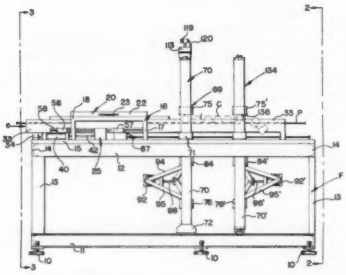
27,881

COMPACT DIFFERENTIAL PRESSURE FORMING MACHINE

Gaylord W. Brown and Bradley A. Schnepp, Beaverton, Mich., assignors to Koehring Company, Milwaukee, Wis.

Original No. 3,513,505, dated May 26, 1970, Ser. No. 584,436, Oct. 5, 1966. Application for reissue May 11, 1972, Ser. No. 252,500

Int. Cl. B29c *11/00*; B29d *7/22*
U.S. Cl. 425—155 **11 Claims**



A differential pressure forming machine for forming shapes in a sheet of deformable thermoplastic material including: molds on opposite sides of the sheet; at least one of the molds having a mold cavity and one mold being movable relative to the other to substantially engage and separate the molds; wherein an advancing chain grips the sheet for moving it in increments and a reciprocating drive for the chain has a clamp member clamping to the advancing chain during a forwarding stroke.

The chain at each side of the machine has pins extending laterally outwardly of the outer side of the chain which ride along the undersurface of a laterally extending guide.

27,882

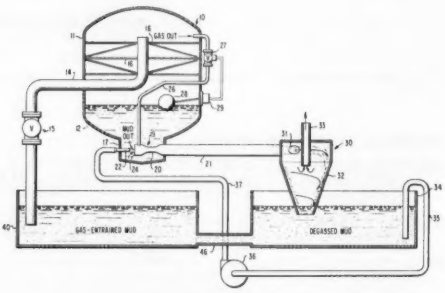
METHOD AND APPARATUS FOR THE DEGASIFICATION OF DRILLING MUDS

Gerald E. Burnham, Sr., Lafayette, La., assignor to Thermotics, Inc., Houston, Tex.

Original No. 3,616,599, dated Nov. 2, 1971, Ser. No. 12,543, Feb. 19, 1970. Application for reissue Sept. 6, 1972, Ser. No. 286,723

Int. Cl. B01d *19/00*
U.S. Cl. 55—41 **40 Claims**

Drilling mud degasification apparatus having baffle plates in a vacuum tank over which thin films of mud are degassed as they flow downward to a receiving area of the tank. Venturi-type dual ejector apparatus is located in a sump in the tank to remove degassed mud and to draw a vacuum on the upper portion of the tank.



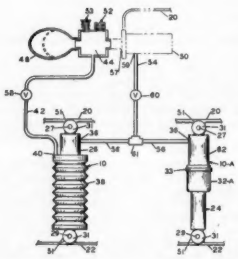
27,883

SUSPENSION SYSTEM FOR VEHICLES

Arthur E. Vogel, 1860 E. Cherry St. 43205, and Palmer Fultz, 4280 Hayden Run Road 43221, both of Columbus, Ohio

Original No. 3,480,288, dated Nov. 25, 1969, Ser. No. 529,328, Feb. 23, 1966, which is a continuation-in-part of abandoned Ser. No. 479,225, Aug. 12, 1965. Application for reissue Nov. 25, 1970, Ser. No. 92,959

Int. Cl. B62d *37/00*; B60s *9/00*
U.S. Cl. 280—6.1 **35 Claims**



A controlled suspension system for a vehicle having unsprung and sprung weight portions including a vertically expansible and contractable chamber disposed between those portions, together with a compressor connected with the chamber, the chamber having an outlet

orifice which is at least partially opened and closed as the static load on the unsprung portion decreases and increases, respectively.

Preferably, the compressor inlet and the outlet orifice are connected directly with atmosphere. Also, preferably, the control system is embodied as a part of the shock absorbing apparatus for the sprung weight of the vehicle.

27,884

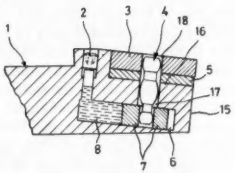
TOOLHOLDER ASSEMBLIES

Wlajko Mihic, Tegnervagen 9, 802 28, Gavle, Sweden

Original No. 3,579,776, dated May 25, 1971, Ser. No. 776,443, Nov. 18, 1968. Application for reissue July 3, 1972, Ser. No. 268,757

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **5 Claims**



A toolholder assembly incorporates a body which at one end has a recess for receiving an indexable cutting insert. A bore for a two-armed lever which is pivotally connected to the body extends from the recess in the toolholder body, and one end of the lever cooperates with the cutting insert, while the other end of the lever cooperates with a piston which is movable in the body. The piston is under the action of a pressure medium which is contained in a hollow space in the body and acted upon by a pressure actuating member movable into and out of the space.

27,885

MAGNETIC TAPE CARTRIDGE PLAYER SYSTEM

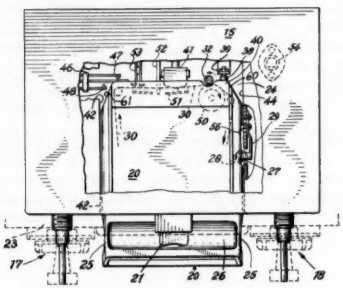
William P. Lear, Verdi, Nev., assignor to The Gates Rubber Company, Denver, Colo.

Original No. 3,560,126, dated Feb. 2, 1971, Ser. No. 712,648, Mar. 13, 1968, which is a continuation-in-part of Ser. No. 494,645, Oct. 11, 1965, now Patent No. 3,403,868, which is a division of Ser. No. 393,083, Aug. 31, 1964, now Patent No. 3,350,025. Application for reissue June 27, 1972, Ser. No. 268,183

The portion of the term of the patent subsequent to Oct. 1, 1985, has been disclaimed

Int. Cl. B65h *17/48;* **G11b** *23/06*

U.S. Cl. 242—55.19 A **12 Claims**



The player accommodates magnetic tape cartridges with the tape arranged in endless array. The cartridge is in rectangular form, and is inserted in an opening of the player for direct engagement in the play mode. A recess or V-notch in one side of the cartridge coacts with a prepositioned retention member biased into the opening. The member engages the notch to provide a substantial forward force component that presses an exposed tape portion against the drive capstan and for transcription by a pick-up head, and simultaneously provides a lateral force component that presses the cartridge against an opposite side guide that holds the certridge in stable play position.

27,886

KNIT GARMENT AND METHOD OF MANUFACTURE

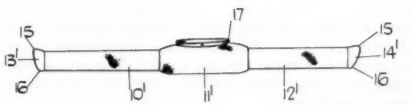
Martin Robert Johnson, Broughton Astley, England, assignor to Prenihan A.G., Chur, Switzerland

Original No. 3,673,821, dated July 4, 1972, Ser. No. 790,363, Jan. 10, 1969. Application for reissue Jan. 31, 1973, Ser. No. 328,449

Claims priority, application Great Britain, Jan. 16, 1968, 2,414/68; Feb. 26, 1968, 9,278/68

Int. Cl. A41b *9/02*

U.S. Cl. 66—177 **37 Claims**



A two legged lower-body garment of the class comprising panti-hose, body stockings, leotards, tights, pantaloons, and pants, is made from a single blank of essentially seamless tubular form throughout knitted on a circular knitting machine and comprising two leg portions and an intermediate pant-forming portion. A waist opening is made in the waist portion; toes may be formed by cutting and seaming, or automatically on the knitting machine. At least the intermediate portion and preferably each portion is knitted of stretchable yarn which may be stretch yarn of elastomeric yarn. If of stretch yarn, the garment may be unboarded but may be given a relaxing treatment.

27,887

ESTERS OF PHOSPHORUS-CONTAINING ACID, EPOXIDE AND DICARBOXYLIC ACID AND PROCESS FOR PRODUCING SAME

Charles W. McGary, Jr., Charleston, and Percy L. Smith, Dunbar, W. Va., assignors to Union Carbide Corporation

No Drawing. Original No. 3,419,642, dated Dec. 31, 1968, Ser. No. 198,729, May 31, 1962. Application for reissue Aug. 28, 1970, Ser. No. 68,059

Int. Cl. C08f *9/08, 9/38;* **C08g** *22/44*

U.S. Cl. 260—952 **26 Claims**

Phosphorus-containing esters are provided comprising the reaction products of (a) orthophosphoric acid, orthophosphorous acid and epoxide adducts thereof, (b) vicinal epoxides including alkylene oxides and halogen-substituted alkylene oxides, and (c) dicarboxylic acid anhydrides including aliphatic and aromatic acid anhydrides and halogen-substituted derivatives thereof.

27,888

SEPARATING HYDROCARBONS WITH LIQUID MEMBRANES

Norman N. Li, Edison, N.J., assignor to Esso Research and Engineering Company

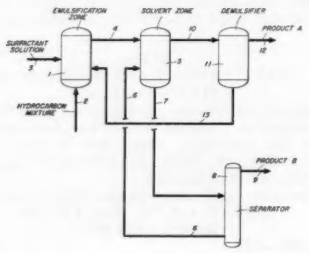
Original No. 3,410,794, dated Nov. 12, 1968, Ser. No. 533,933, Mar. 14, 1966. Application for reissue Nov. 6, 1970, Ser. No. 87,641

Int. Cl. B01d *13/00*

U.S. Cl. 208—308 **15 Claims**

A process for separating mixtures into their component parts by means of selective permeation through liquid

(surfactant) membranes. The mixture to be separated is first emulsified in aqueous medium containing a selected surfactant. The emulsified mixture droplets which are coated with surfactant are then contacted with a selected solvent. The more permeable component(s) of the mix-



ture permeate the membrane coating and pass into the solvent phase. The less permeable component(s) remain in the droplets in the emulsion phase. The separated components are then separated from the respective phases by conventional means.

27,889

PORTABLE, ONE-HAND-OPERABLE LABELING MACHINE

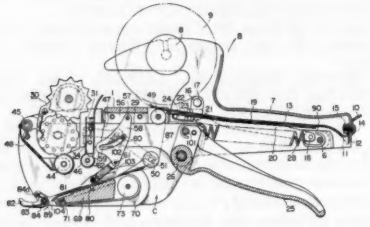
Yo Sato, Tokyo, Kiyoji Nagashima, Ageo, Yoshio Murata, Omiya, Kazunosuke Makino, Ageo, Eiichi Matsushima, Omiya, and Sozo Izumihara, Kawaguchi, Japan, assignors to Sato Kiko Kabushiki Kaisha, Tokyo, Japan

Original No. 3,551,251, dated Dec. 29, 1970, Ser. No. 738,176, June 19, 1968. Application for reissue July 17, 1972, Ser. No. 272,136

Claims priority, application Japan, June 26, 1967, 42/40,906; Aug. 17, 1967, 42/52,452; Sept. 16, 1967, 42/59,244; Sept. 22, 1967, 42/80,476; Nov. 11, 1967, 42/72,485; Feb. 20, 1968, 43/10,474

Int. Cl. B32b *31/00;* **B44c** *7/00*

U.S. Cl. 156—384 **6 Claims**



An improved portable, one-hand operable labeling machine comprising a machine frame having a palm-grip handle integrally joined thereto, a grip lever operated by manual squeezing thereof, a roll holder holding rotatably a roll of label tape coated on one surface thereof with an adhesive material and having partial cuts aligned in the tape transverse direction and spaced at equal intervals in the tape longitudinal direction, a tape advancing means driven by movements of said grip lever to engage successively said cuts to advance said label tape step by step toward a dispensing opening of the machine frame, a tape cutting device driven by movement of said grip lever to cut successively the label tape at said cuts, a printing device driven by movement of said grip lever to imprint inscriptions on each of said cut pieces of the label tape, and a tape applying device disposing in the vicinity of the dispensing opening of the machine and operating to press each label piece onto an article to cause said adhesive material to stick the cut piece to the article. The tape advancing means has at least one pawl tooth for engaging at least one of the cuts of the label tape, said pawl tooth undergoing an intermittent reciprocating motion resulting from one cycle of the squeezing and releasing the grip lever. The tape advancing means may be a tape advancing roller provided around its cylindrical surface with projecting pawl teeth spaced at constant circumferential intervals equal to the spacing intervals of the cuts of the label tape, and may be a conveyer type mechanism. Disclosed also are various kinds of the cutting mechanism adapted to carry out improved and effective cutting of the cuts of the label tape. The adhesive material may be provided with a moisture applying device for applying moisture thereto.

27,890

PROTECTIVE COATING FOR METAL SURFACES

Edward Holbus, 6108 Greenleaf Blvd., Racine, Wis. 53406

No Drawing. Original No. 3,518,099, dated June 30, 1970, Ser. No. 792,862, Jan. 21, 1969, which is a continuation-in-part of abandoned Ser. No. 469,309, July 22, 1965. Application for reissue June 22, 1972, Ser. No. 265,263

Int. Cl. C08h *9/06;* **C09g** *1/08*

U.S. Cl. 106—10 **9 Claims**

For applying a self-polishing coating to an automobile body in a car wash as a separate application following wash and rinse:

Ranges of ingredients in preferred composition

3–10 parts by weight of carnauba wax
11–14 parts by weight of mineral oil
7–14 parts by weight of a cationic emulsifier
1–4 parts by weight of non-ionic emulsifier having 1–3 parts water soluble portion and ¼–1 part oil soluble portion
Sufficient water to bring 40 pounds of the foregoing ingredients to a total of 30 gallons in volume.

Procedure

The composition is emulsified by stirring the heated ingredients to make a concentrate. At the point of use the concentrate is usually diluted. Water is added and stirred. It is then sprayed on the surface to be protected at a temperature usually 120° F. or higher. The spraying is normally done with a vehicle of additional hot water.

When excess moisture is wiped off, a self-polishing glossy and protective coating is left on the surface. In a typical car wash using forty to fifty pounds pressure, the application may involve twelve to sixteen ounces of the dilute solution applied in about thirty seconds with about five to eight gallons of water.

PLANT PATENTS

GRANTED JANUARY 15, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,433
CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed Dec. 27, 1971, Ser. No. 212,829
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey (pot type), substantially as herein shown and described, characterized particularly as to novelty by its unique combination of a year round response period of approximately eight weeks, its stability as to type, and its red bronze color.

3,434
PECAN TREE

Allie Bohls, Austin, Tex., assignor to O. S. Gray, Arlington, Tex.

Filed May 4, 1972, Ser. No. 250,446
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—31 **1 Claim**

A new variety of pecan tree distinguished by its vigorous, spreading and twiggy growth habit and by its precocious and prolific production of thin shelled nuts having a high weight ratio of kernel to shell.

3,435
CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed Dec. 27, 1971, Ser. No. 212,830
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, pot type, substantially as herein shown and described characterized particularly as to novelty by its unique combination of an intense purple color, luxuriant foliage, an increased number of flowers per plant, and uniform response under poor winter light conditions.

3,436
AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,504
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by the very deep violet color of its blossoms, which bloom recurrently the year around, its uniform and heavy flowering habit and its very abundant foliage.

3,437
CARNATION PLANT

Marion M. Dropinski, Colorado Springs, Colo., assignor to Broadmoor Hotel, Inc., Colorado Springs, Colo.

Filed Mar. 22, 1972, Ser. No. 237,210
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive variety of carnation plant of the Littlefield variety, substantially as herein shown and described, characterized particularly as to novelty by its large blossoms of pure white with no variegation, longer and stronger stems, with the flowers lasting longer.

3,438
ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Mar. 21, 1972, Ser. No. 236,798
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

A bush seedling rose of the hybrid tea class, asexually reproduced by budding in Ontario, Calif. Flowers are of a light red color, range up to 5½" in diameter, and consist of 30 to 36 large petals with between 5 and 12 petaloids. The fragrance is moderate and mixed. The plant has large dark green foliage which is generally glossy and usually flat, though sometimes slightly troughed. The habit of growth is vigorous, moderately upright, and well-branched. The flowers usually are borne singly on peduncles and stems which are medium to large in length and caliper. Steady bloomer. Wet weather may delay or prevent opening of buds or cause peduncles to bend under weight of flowers.

3,439
CARNATION PLANT

Marion M. Dropinski, Colorado Springs, Colo., assignor to Broadmoor Hotel, Inc., Colorado Springs, Colo.

Filed Mar. 22, 1972, Ser. No. 237,209
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive variety of carnation plant of the Littlefield variety, substantially as herein shown and described, characterized particularly as to novelty by its large blossoms of very deep orange with no variegation, longer and stronger stems, with the flowers lasting longer.

3,440
ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Mar. 8, 1972, Ser. No. 232,984
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—11 **1 Claim**

A new variety of asexually reproduced grandiflora rose characterized primarily in the color transition of its bloom, from yellow overlaid with red as the calyx breaks, then through purplish red petals streaked with yellow, after which the petals of the cup-shaped bloom are progressively light yellow with some petals almost white and others sometimes tipped with purplish pink, then deepen to a purplish pink intermixed with yellow, and when full blown, the flower is purplish red with little if any yellow showing. The plant is of a very tall bush type with a tendency to develop pendant tips of the initial canes. The leaves are large, dark green and glossy, and leathery in texture. Initial primary stems tend to bear clusters of five or more flowers; on later growth there are some clusters of from five to two blooms, and occasionally a flower is borne singly.

3,441

AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, West Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,509
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 1 Claim

A new variety of African violet plant distinguished by the deep violet color of its blossoms, which bloom recurrently the year around, its sturdy and relatively long upright flower stalks which display the flowers high above the foliage, and its abundant production of plantlets during cut leaf propagation.

3,442

GLADIOLUS PLANT

Carl H. Fischer, St. Charles, Minn., assignor to Selected Glads, Inc., New Albany, Ind.

Filed Nov. 15, 1971, Ser. No. 199,049
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—85 1 Claim

1. A new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its unique color, which is an unusual blend of the pink blush of ripe peach into yellow, and its strong and healthy growth.

PATENTS

GRANTED JANUARY 15, 1974

GENERAL AND MECHANICAL

3,784,984

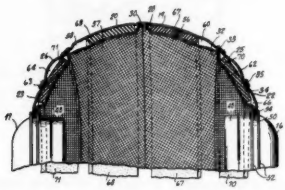
HEADGEAR STRUCTURE

Jackson Anthony Aileo, Carbondale, Pa., assignor to Gentex Corporation, Lackawanna, Pa.

Division of Ser. No. 88,823, Nov. 12, 1970. This application Mar. 20, 1972, Ser. No. 236,456

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R **10 Claims**



A flexible helmet having plural inner and outer panels of woven fabric cut and assembled so as to conform closely to heads of different shapes and sizes, and plural pads for protecting the wearer's head against impacts, the pads being removably carried in separate pockets formed by the inner and outer panels. The pads may be fabricated of resilient energy-absorbing material and/or may include a layer of flexible ballistic material for protection against blows from sharp objects. The helmet panels may be made of open mesh fabric, and the pads may be perforated for ventilation of the helmet; also, the inner surfaces of the pad may be so shaped or lined as to provide ventilation spaced between the pads and the wearer's head. Sound-attenuating earcups are carried by the helmet in position for close-fitting engagement with the head. Size adjustment of the helmet is effected by means of a variable length nape strap at the rear of the helmet. In addition, the helmet may carry communications equipment, including earphones within the earcups, and a microphone, with a switch for the microphone sealed in a watertight enclosure within one of the earcups. An elongated flap extending across the lower inner margin of the rear of the helmet may be folded over and fastened to provide a passage for holding the wiring of the communications equipment. For further protection of the head, a rigid outer shell may be placed over and detachably secured to the flexible helmet, being stabilized in position relative thereto by means of cooperating, complementary pressure-actuable surface contact fastening elements respectively carried on the crown portions of the outer surface of the flexible helmet and the inner surface of the rigid shell.

3,784,985

ATHLETIC ARMOR AND INFLATABLE BAG ASSEMBLY

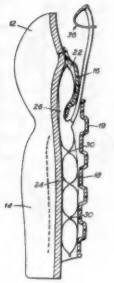
Robert E. Conroy, Park Ridge, Ill., assignor to Air Guard Industries, Rosemont, Ill.

Filed May 2, 1972, Ser. No. 249,668

Int. Cl. A41d *13/06*

U.S. Cl. 2—22 **10 Claims**

An inflatable bag for use with curvilinear athletic plate to protect anatomical parts of the torso, arms and legs. The curved athletic plate has a soft base material mounted to one side, and an opening is used to insert and withdraw an inflatable bag into the space between the athletic armor and the soft base material. The bag is inflated through air-fill means so that the assembly absorbs shocks in an improved manner.



3,784,986

TROUSERS

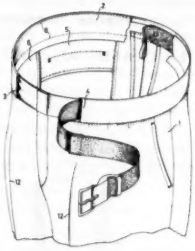
Rolf Klaproth, Friedrich-Bach-Str. 25-26, Buckenburg, Germany

Filed Sept. 5, 1972, Ser. No. 286,325

Claims priority, application Germany, Sept. 8, 1971, 7134248

Int. Cl. A41d *1/06*

U.S. Cl. 2—237 **6 Claims**



The trousers comprise a waistband defining a belt tunnel and a belt extending through said belt tunnel in the longitudinal direction thereof. The belt comprises an intermediate belt portion consisting of a rubber band and contained in said belt tunnel, a first belt end portion connected to one end of said rubber band and extending out of said belt tunnel at one end thereof, a second belt portion connected to the other end of said rubber band and extending out of said belt tunnel at the other end thereof, and a belt buckle connected to said second belt end portion and disposed outside said belt tunnel and adapted to be fixed to said first belt end portion at a selected portion of the length of said first belt end portion.

3,784,987

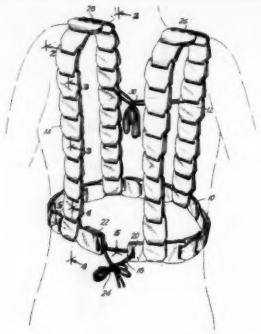
ARTICLE OF CLOTHING INCLUDING A COMBINED BELT AND SUSPENDER ARRANGEMENT

Delores Bryant, 936 West End Ave., New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,426

Int. Cl. A41f *19/00*

U.S. Cl. 2—310 **1 Claim**



An article of clothing is provided including a belt portion with suspender parts connected thereto. The suspender parts are of such length as to maintain the belt portion above the waist of the wearer. The different elements of the article may be of different material such as interengaged leather loops or cloth or the like. The belt may be closed by a thong and the suspender parts may be interconnected. In one arrangement, the suspender parts are connected at the front of the body of the wearer to the belt by a part which interconnects the open ends of the belt.

3,784,988

LEG PROSTHESIS WITH RESILIENTLY MOUNTED STUMP SOCKET

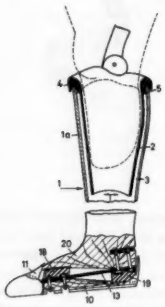
Theodor Trumpler, Haydnstrasse 2a, Heidelberg, Germany

Filed May 15, 1972, Ser. No. 253,468

Claims priority, application Germany, May 18, 1971, 2124564

Int. Cl. A61f *1/02, 1/04, 1/08*

U.S. Cl. 3—18 **9 Claims**



A leg prosthesis comprises a stiff upright leather casing, a sleeve freely suspended from the upper rim thereof and extending into the casing with free elastic play in all directions, and a foot affixed to the lower end of the casing. The foot includes a sole and a separate ankle part, a leaf spring extending through the foot in a horizontally inclined plane and connecting the foot parts, and a rubber cushion mounting the ends of the leaf spring.

3,784,989

HIGH-DENSITY RELAX-TRANSPORT SYSTEM

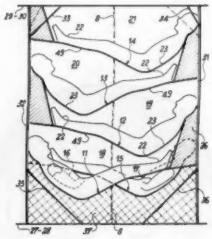
Pierre LeGrand, 98 Rue de Rennes, Paris, France

Filed July 10, 1972, Ser. No. 270,164

Claims priority, application France, July 20, 1971, 71.26437; Oct. 25, 1971, 71.38309

Int. Cl. A47c *19/20;* **B61d** *31/00;* **B64d** *11/00*

U.S. Cl. 5—9 R **5 Claims**



A high-density relax-transport system, intended especially to equip the useful space of means of transit and transport, fundamentally characterized by its arrangement in this space, in a compact interlocking structure, of a certain number of individual berths. These berths are formed of couchettes whose flexible and/or rigid bottoms have an at least transversally concave general shape and whose widths decrease advantageously toward the extremities, particularly from the hips to the feet. The said interlocking is so conceived that each couchette berth is limited to the functional volume required to permit the occupant's movements, with a generous space allowance in the torso and head region.

3,784,990

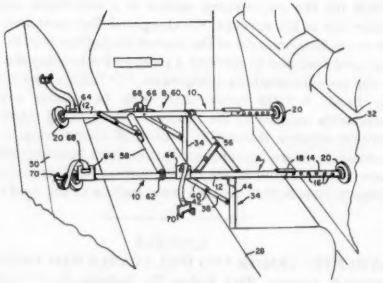
CHILD'S BED SUPPORT FOR MOTOR VEHICLES

Barry A. Elisofon, and Judith Elisofon, both of 2010 Newkirk Ave., Brooklyn, N.Y.

Filed May 11, 1972, Ser. No. 252,281

Int. Cl. A47c *27/08;* **A47d** *7/00*

U.S. Cl. 5—94 **8 Claims**



A stand for supporting a baby's bed within a motor vehicle which consists of two individual, interengageable, foldable units. Each unit consists of a telescoping rod capable of being braced against opposed surfaces of a car interior. Each rod is adapted to be rested on the seat of the vehicle and has a foldable leg erectable to support it on the floor of the vehicle. Each

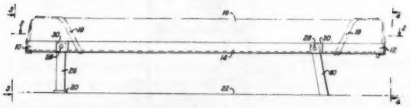
rod also has a foldable spacing member capable of being moved into normal relation thereto and having at its free end means for engaging the rod of the other unit, to thereby both space and connect the units into a platform; the two spacing rods being connected to their rods in relatively different positions, intermediate the ends of the rod.

3,784,991

COT FRAME MOVABLE BETWEEN A PRONE POSITION AND AN UPRIGHT POSITION

Robert E. Watson, and Claude L. Pitts, both of Meridian, Miss., assignors to Hoscot Limited, Meridian, Miss.

Filed Feb. 23, 1972, Ser. No. 228,504
Int. Cl. A47k *19/06*
U.S. Cl. 5—136 **1 Claim**



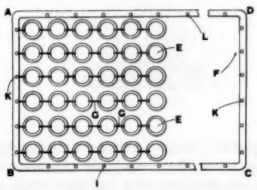
A cot frame movable between a prone position and an upright position. Back and front legs are respectively pivotally mounted to the back and front portions of the frame. The back legs are so mounted to the frame that the frame, in its upright position, is constrained to extend upwardly and rearwardly of the back legs. The front legs are so mounted to the frame that the front legs, when the frame is in its prone position, extend downwardly and forwardly of the frame.

3,784,992

ELASTIC SUPPORTING SURFACE AND METHOD FOR ITS PRODUCTION

Roberto Galiani, Piazzale Brunelleschi 15, Napoli, Italy

Filed Nov. 23, 1970, Ser. No. 91,883
Claims priority, application Italy, Nov. 29, 1969, 62117 A/69
Int. Cl. A47c *19/00*
U.S. Cl. 5—186 R **3 Claims**



An elastic supporting surface for beds, divans, arm-chairs and the like, and a method of producing such surface, comprising preparing a particular chemical composition suitable to form rubber-like elastic elements, connecting these elements in perpendicular rows by hooks, and connecting the elements at the ends of the rows under tension to a peripheral frame so as to form a plane elastic surface.

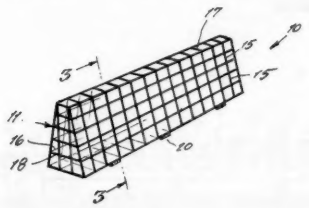
3,784,993

WEDGE BOLSTER BEDDING HOLDER

Florence Berkowitz, 2182 Barnes Ave., Bronx, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,556
Int. Cl. A47c *17/00, 21/00*
U.S. Cl. 5—308 **1 Claim**

A wedge bolster for a "hi-riser" or day couch which is convertible for night time use as a bed, the wedge bolster at day time serving as a back rest for the couch, and wherein the wedge bolster is hollow with a central compartment within



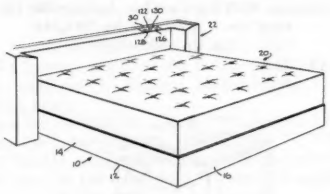
which the bedding used for sleeping, is stored during the day time so to form a convenient storage for the same.

3,784,994

AIR BED

Edmund Kery, 908 E. 55th St., New York, N.Y.

Filed Nov. 27, 1972, Ser. No. 309,734
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 **7 Claims**



An air bed comprising an air spring unit disposed on a support platform and comprising a plurality of parallel, uniformly spaced and vertically aligned inflatable bellows having closed tops and open ends, the tops interlocked and the ends fixed through the platform, and an elastic expandable member coupled to the open end of each bellows and disposed within an expansion-limiting frame. An air tube is coupled to each elastic member and leads into an enclosed distributor by engagement with a valve mounted therethrough. Inflation of the combined bellows and elastic member is effected by air pumped from a compressor having an air line leading into the distributor. Closing and opening of the valves is effected by a table within the distributor selectively moveable against the valve release pins.

3,784,995

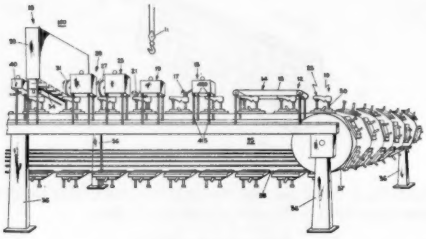
SHOE MANUFACTURING APPARATUS

Robert B. Egtvedt, Comstock Park, and William M. Booth, Grand Haven, both of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Feb. 9, 1972, Ser. No. 224,766
Int. Cl. A43d *3/00*
U.S. Cl. 12—1 A **41 Claims**

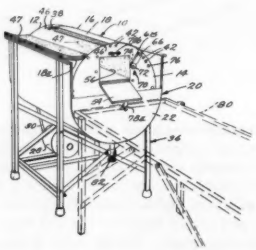
Herein is disclosed a carrier for securely holding, at a fixed reference plane, an inverted shoe last upon which a shoe upper is mounted during the manufacturing of the shoe. The carrier includes two vertically movable posts to which the inverted shoe and last are mounted and which are movable to hold the bottom of the shoe against a horizontal reference plane during a gauging step for establishing the reference plane for the shoe last during manufacture. Gauging and locking apparatus along the side of the carrier advancing conveyor cooperates with each carrier.

The gauged and locked carrier, with its shoe last having a shoe upper thereon is transported along various stages of an automated assembly line held in the fixed predetermined reference plane.



Unique roughing apparatus cooperates with the shoe last and shoe upper to sequentially controllably roughen selected portions of the shoe upper for subsequent sole adhesion thereto.

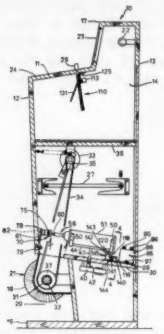
3,784,996
GOLF BALL CLEANING MACHINE
Karl J. Ambrose, 9009 Bag Cove Ln., Jacksonville, Fla.
Filed Nov. 7, 1972, Ser. No. 304,344
Int. Cl. A63b *47/04*
U.S. Cl. 15—21 A **7 Claims**



A washing machine for washing small articles comprising a generally horizontal drum having a circumferential wall and end walls; means mounting said drum for rotation about its axis so that the articles to be cleaned are tumbled within the lower part of the drum during rotation thereof; an adjustable scoop device within said drum and rotatable therewith, said scoop device being selectively adjustable between a first position in which it forms a surface projecting inwardly from the circumferential wall of the drum for gathering articles from the lower portion of the drum and for retaining such articles during a portion of any given revolution of said drum and a second position in which it is inoperative to gather and retain articles; and outlet means including a movable closure member in a wall of said drum through which articles retained by said scoop device may be removed when said drum is not rotating.

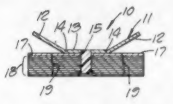
3,784,997
AUTOMATIC SHOE POLISHER
William A. Beck, River Hills, Wis., assignor to Beck, Inc., Grafton, Wis.
Filed Sept. 27, 1972, Ser. No. 292,669
Int. Cl. A47l *23/02*
U.S. Cl. 15—31 **10 Claims**

A coin-operated automatic electric shoe polisher comprises a motor-driven rotatable two-section polishing brush and two independently selectively operable polish dispensing assemblies for repeatedly dispensing a spray of appropriately colored liquid polish to a brush section during one cycle of operation. Each polish dispensing assembly comprises a motor driven rotatable container support for holding an aerosol can of polish, a dispensing adapter removably attachable to the can, and a spray rail actuator for operating the adapter one or more times during each revolution of the can. Control means



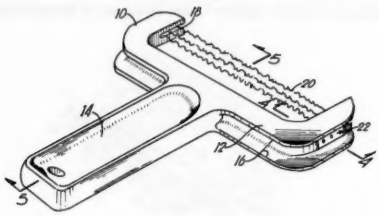
for initiating and maintaining energization of the brush motor and the gear motor for each dispensing assembly during one cycle of operation comprise a coin-operated mechanism, a starter switch momentarily actuated thereby, and a cam-operated time responsive to rotation of the container support to actuate a timer switch which initiates operation of the brush motor and maintains operation of the gear motor until the cycle is complete.

3,784,998
COMPOSITION APPLICATOR
John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.
Filed July 3, 1972, Ser. No. 268,804
Int. Cl. A47k *7/03;* **A47l** *23/05*
U.S. Cl. 15—209 R **3 Claims**



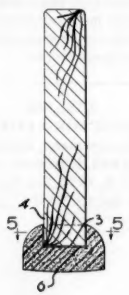
A pair of coplanarly disposed support sheets, suitably having co-extensive areas, have multiple ply solvent-resistent, thin, flexible sheets disposed in a coplanar stack adjacent to one planar face of the pair of coplanar support sheets. The pair of support sheets and the multiple ply applicator composition sheets are preferably co-extensive in area and are secured contiguously together by a central securing means. A multiplicity of incised slit apertures extend from the exterior perimeter of the toilet applicator inward to the perimeter of a central applicator support area, the slit apertures extending completely through the pair of coplanar support sheets and the multiple ply solvent-resistent applicator sheets. Multiple toilet applicator leaves are disposed between the multiple slit apertures. Multiple handle flaps are formed by the first impermeable applicator sheet, which can be folded to form a finger tip grip oppositely disposed to the multiple ply of solvent-resistent flexible sheets. The toilet applicator can be impregnated with solid or liquid chemical compositions suitable for a single use application. The applicator can be used also to apply chemical compositions such as beauty toilet preparations, shoe polish, and other paste and liquid compositions from a commercial storage container.

3,784,999
CLEANER FOR FORKS
Gerald Preston, Saint Catherines, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed July 17, 1972, Ser. No. 272,423
Int. Cl. A47l *21/04*
U.S. Cl. 15—218.1 **3 Claims**



A device for cleaning forks employing a U shaped member with a handle extending outward from the cross piece. A plurality of spaced parallel cleaning elements essentially coplanar with member and handle extend transversely and taut between the two legs of the member.

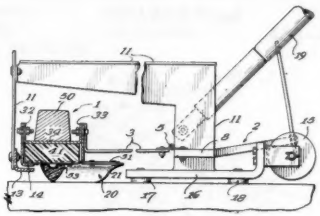
3,785,000
SPONGE BRUSH
Russell S. Zacha, and Bonnie D. Zacha, both of c/o Bon-Del Ceramics, Corvallis, Mont.
Filed June 15, 1972, Ser. No. 263,005
Int. Cl. A47l *13/16;* **B44d** *3/28*
U.S. Cl. 15—244 R **1 Claim**



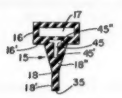
A sponge brush is made of a cylinder of open cell resilient synthetic resin foam, for example, foamed polyurethane and a cylindrical stick of hardwood having a planar end face and of a diameter about one half the diameter of the open cell foamed resilient resin cylinder. A known type contact cement secures the end of the stick to the sponge. The remaining area of the sponge end surface is secured by the contact cement to the cylindrical surface of the stick immediately adjacent to its planar end face by gathering the upper part of the sponge cylinder inward.

3,785,001
BOWLING LANE FINISH APPLICATOR
Arvi E. Niemi, and John R. Marecek, both of Muskegon, Mich., assignors to Brunswick Corporation, Skokie, Ill.
Filed Mar. 27, 1972, Ser. No. 238,298
Int. Cl. B05c *11/04*
U.S. Cl. 15—245 **7 Claims**

The invention is a device for applying high viscosity finishes upon bowling lanes. A rubber billiard cushion used as the applicator blade is mounted to a flexible acrylic plate backed by a heavy layer of resilient plastic or rubber foam. The mounting plate and its resilient backing ride freely within an inverted "U"-shaped channel member. Downward pressure on the blade is maintained by weight placed on top of the channel member and distributed through the resilient layer of foam.

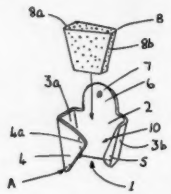


3,785,002
WINDSHIELD WIPER ASSEMBLY
William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.
Division of Ser. No. 259,672, June 5, 1973, Pat. No. 3,751,754, Continuation-in-part of Ser. No. 190,067, Oct. 18, 1971, Pat. No. 3,725,971, which is a continuation-in-part of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application Dec. 6, 1972, Ser. No. 312,743
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.36 **6 Claims**



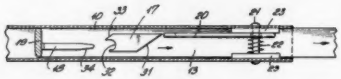
A wiper blade unit has fasteners extending through clearance apertures in an arm connector so that the blade unit may become laterally canted within limits relative to the arm connector in both wiping directions. The blade unit includes a resilient blade body having a crown portion with a cavity containing metallic leaf springs and a wiping portion beneath the crown portion including a narrow wiping lip and an intermediate body portion which is progressively narrower in cross section from the base of the crown portion in the direction of the wiping lip. A longitudinally extending hollow core which is capable of cross sectional deformation to correspondingly deform and vary the resiliency of the body portions surrounding the core as a function of changes in direction and pressure of wiping forces at the wiping lip is provided in the blade body spaced below the spring cavity and extending into the progressively narrower intermediate portion. Straps inserted into end portions of the cavity are provided with closure caps which abuttingly engage the leaf springs and prevent longitudinal movement of the springs relative to the blade body.

3,785,003
CURTAIN HANGING
Gwendoline May Thomson, P.O. Box 49017, Rosettenville, Johannesburg, South Africa
Filed Oct. 4, 1971, Ser. No. 186,063
Claims priority, application South Africa, Oct. 13, 1970, 70/6975
Int. Cl. A47h *13/00*
U.S. Cl. 16—87.2 **3 Claims**



A curtain or drapery hanger is provided which includes a body having a vertical dovetailed slot with forwardly extending side walls, one of which is wider than the other, each of the forward edges of the side walls having a flange extending towards the other wall. The hanger includes a keeper or tongue element complimentary in shape to the space defined by the walls of the body member and adapted to engage drapery material which is slid into the slot by sideways insertion of the tongue towards the wider side wall.

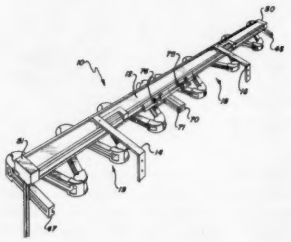
3,785,004
DOOR CHECK ATTACHMENT
Gunter Stoffregen, 16 Davis Downs Pl., Westhill, Ontario, Canada
Filed Jan. 27, 1972, Ser. No. 221,300
Int. Cl. E05f *3/00*
U.S. Cl. 16—49 **1 Claim**



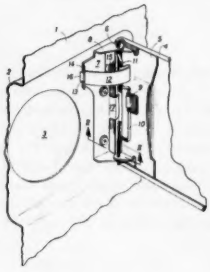
A device adaptable for attachment to a pneumatic or hydraulic door check unit, which serves to keep a fully opened door in that position, until subsequently released. The device consists of a latching mechanism in which a pivotably mounted hooked member is directed by lateral pressure of a trigger member responsive to the motion of the door into the position in which the hooked member will latch on the initial return stroke to retain the door in the open position. The latching effect on the hooked member creates lateral motion, such that upon further opening motion of the opened door, the trigger member acts to move the hooked member away from the latching position so that on the second return stroke, the hooked member is free of latching engagement, and permits the door to close.

3,785,005
DRAPERY SUPPORT
George H. Baker, Sr., Dunlap, Ill., assignor to Baker Drapery Corporation, Peoria, Ill.
Continuation-in-part of Ser. No. 152,879, June 14, 1971. This application Aug. 2, 1972, Ser. No. 277,304
Int. Cl. A47h *13/12, 5/032*
U.S. Cl. 16—87.4 R **7 Claims**

A traverse rod assembly including a horizontally disposed traverse rod with a track therein having end carrier members with slides perpendicular to the traverse rod at each end of the rod, and movable carrier members slidable in the traverse rod track also having slides perpendicular to the traverse rod, there being provided a first set of pivotally interconnected drapery support links including an end link having a projection slidable in one of the end carrier slides and a butt link having a projection slidable in one of the movable carrier member slides, the projection on the end link being square and the end carrier member slide being sized to maintain the end link perpendicular to the traverse rod; there also being provided a second set of pivotally interconnected drapery supporting links including an end link and a butt link, with the second set butt link being identical to the first set end link and the first set butt link being identical to the second set end link to reduce the number of dies required to make the first and second set end links and butt links, with the slides associated with the movable carrier members being larger than the slides associated with the end carrier members so that the butt links may freely pivot with respect thereto.

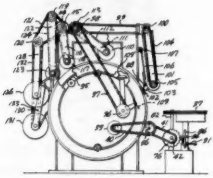


3,785,006
HINGE FOR A COVER
Helmut Metz, Neuberg, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Ingolstadt, Germany
Filed Nov. 8, 1971, Ser. No. 196,693
Int. Cl. E05f *1/12*
U.S. Cl. 16—184 **3 Claims**



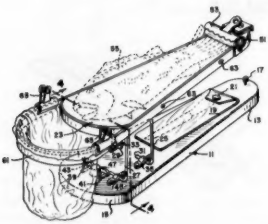
A hinge is provided for a cover preferably used for a tank closure in the body of a motor vehicle. The invention is characterized in that the cover is rotatably mounted upon a crankshaft having a crank pin which is engaged by a sheet spring supported on a ground plate. The other crank pin of the shaft is fixed to the cover.

3,785,007
FISH-CLEANING APPARATUS
Elmer R. Hogan, Bellevue, and John I. Simpson, Seattle, both of Wash., assignors to Smith-Berger Manufacturing Corporation, Seattle, Wash.
Division of Ser. No. 19,162, March 13, 1970, Pat. No. 3,670,363. This application Mar. 27, 1972, Ser. No. 238,270
Int. Cl. A22c *25/14*
U.S. Cl. 17—59 2 Claims



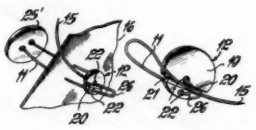
Tail-impaling pins on the bull ring of fish-cleaning mechanism hold fish to the periphery of the bull ring in moving them past cleaning implements located in positions spaced circumferentially around the bull ring. A parallel-link control maintains the belly-fin cutter in proper angular relationship to the bull ring and a more direct and simplified drive arrangement is provided for the rotary cleaning scrapers and brushes alongside the bull ring.

3,785,008
FISH SCALER
Amelia Mary Parker, 16 Memorial Dr., Pittsfield, Mass.
Filed Dec. 13, 1971, Ser. No. 207,392
Int. Cl. A22c *25/00*
U.S. Cl. 17—70 8 Claims



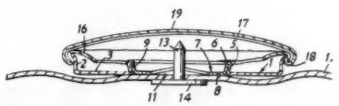
A collapsible fish scaler having a base support plate to which a scaling board having a roughened surface is collapsibly attached. The scaling board has a tail end with a clamp rotatably attached thereto for holding the tail of the fish. The head portion of the scaling board includes a rail extension which defines an aperture about which a container, such as a plastic bag, is attached so that the scales of the fish can drop into the bag during the scaling process. A pair of wire supports are rotatably secured to the bottom of the scaling board and to the top of the base plate with at least one wire support having its respective ends aligned in parallel and positioned under the wing portions of a wing nut when the scaling board is in position for scaling. The wing portions of the nut restrain the movement of the wire supports. When the scaling board is to be stored, the wing nut is rotated approximately 90° to free the ends of the wire supports thereby permitting the wire supports to rotate downwardly toward the base support. The scaling board therefore collapses onto the top of the support board for compact storage.

3,785,009
ATTACHING OF BUTTONS AND THE LIKE WITHOUT SEWING
Bernhard P. Nysten, Aachen, Germany, assignor to Firma William Prym-Werke K.G., Stolberg/Rhineland, Germany
Filed Oct. 28, 1971, Ser. No. 193,369
Claims priority, application Germany, Oct. 29, 1970, P 20 53 091.0
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 TA 7 Claims



A plate element has extending from one major surface thereof a filament portion; it is provided with two passages extending between the two major surfaces, and on the major surface remote from the filament portion with an open groove extending between the two passages at right angles to the elongation thereof. The filament portion is pushed through a web and from the remote side of the web pushed through again, thus forming at the side of the web remote from the plate a loop in which a button or the like may be engaged. The filament is then pushed successively through the two passages in the plate forming at the side of the plate which is remote from the carrier web a loop through which the free end portion of the filament is then pulled so that it is located in the groove. Instead of the plate, the filament portion may also be provided on the bottom or on a section of a snap fastener which can thus be connected with a carrier web without sewing.

3,785,010
PIN-BACK BUTTONS
Cyril Howard Owen, Hockley, England, assignor to A. Ornstin Limited, London, England
Filed Feb. 4, 1972, Ser. No. 223,573
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 PR 12 Claims



"Pin-back" buttons, as commonly used on clothing, shoes, handbags and other articles of flexible carrier material are distinguished by their method of securing to the carrier material. The button has an opening in its rear face to receive a pin having a head. The pin is pushed through the carrier material and into the opening of the button. In the button there are gripping means, to engage the pin, consisting of one or more elements formed at an inward inclination adjacent the opening and so arranged as to permit easy insertion of the pin but prevent any withdrawing movement of the pin. The invention provides an improved arrangement of gripping means incorporated in an insert, the insert being engaged in an undercut seating formed at the rear wall of the button and being locked against inward movement by a flange and against outward movement by the undercut seating.

3,785,011
FISHING LINE

William J. Marks, 5348 W. Lazy Heart St., Tucson, Ariz.

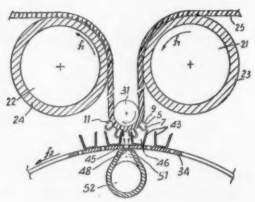
Continuation-in-part of Ser. No. 853,241, Aug. 27, 1969, abandoned. This application June 10, 1971, Ser. No. 151,980
Int. Cl. F16g *11/00*; A01k *91/00, 91/04*
U.S. Cl. 24—115 H 1 Claim

A novel device for fastening flexible line to inflexible articles. The primary application is in sport fishing for tying fishing line to fishing tackle. Fishing line can be conveniently and securely fastened and unfastened to fishing tackle in a matter of seconds without knotting the line. In the device, a hook is formed at one end of an elongate shank as a means for attachment to the eye of a fish hook, snap swivel, lure or similar apparatus. The end of the device's hook is formed to provide an anchor for a fishing line bight whose ends wind around the shank to means at its upper end for engaging the bight ends.

3,785,012
FLEXIBLE BANDS FITTED WITH HOOKS FOR THE FABRICATION OF SEPARABLE FASTENING DEVICES

Patrick Billarant, Nantes, France, assignor to Velco France, Paris, France

Division of Ser. No. 881,533, Dec. 2, 1969, Pat. No. 3,673,301. This application Sept. 1, 1971, Ser. No. 177,118
Claims priority, application France, Dec. 13, 1968, 68.176343
Int. Cl. D03d *39/24*; A44b *17/00*
U.S. Cl. 24—204 4 Claims

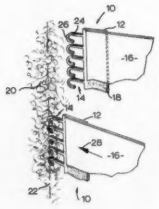


A flexible band having hooks formed of threads of thermoplastic material for engagement with a similar flexible band having elements adapted to cooperate with said hooks so as to constitute a separable fastening device, in which the hooks are obtained by cutting one of the two loop arms of thermoplastic threads, the cutting operation being carried out at a predetermined distance from the crest of each loop. A terminal enlargement is essentially formed on at least one of the two thread extremities which result from the cutting operation.

3,785,013
FASTENER

Walter Stone Nugent, 1048 Cedargrove Blvd., Oakville, Ontario, Canada

Filed Sept. 1, 1971, Ser. No. 141,130
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 3 Claims

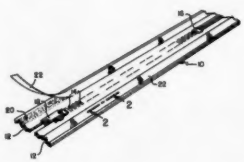


A two-dimensional object is one which has substantially no depth relative to its length and width, e.g., a sheet of paper or a fabric sample. A fastener therefor, comprising a substantially two-dimensional row of hook-like clasping means is attached to a two-dimensional object, and may be releasably engaged with a matted surface for hinging relationship of the substantially two-dimensional article therewith. The fastening locus, i.e., the locus defined by the engagement of discrete ones of the hook-like fastening means with the material of the matted surface, is substantially one-dimensional, as is the hinging locus.

3,785,014
ADHESIVE SLIDE FASTENER PRODUCT

William P. Canepa, Forest Hills, N.Y., assignor to Kay-Cee Industrial Products, Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,040
Int. Cl. A44b *19/00*
U.S. Cl. 24—205.16 R 9 Claims



An improved adhesive slide fastener construction is disclosd wherein at least one surface of a slide fastener stringer has coated thereon a thermoplastic adhesive film layer and a relatively thin pressure sensitive adhesive layer in intimate contact with said thermoplastic adhesive. The thermoplastic adhesive film firmly secures said pressure sensitive adhesive layer to the slide fastener stringer and isolates the stringer fabric and an underlying fabric surface from said pressure sensitive adhesive composition. The pressure sensitive adhesive composition enables rapid alignment and positioning of the slide fastener stringer on a garment surface prior to permanent installation of the slide fastener into the garment.

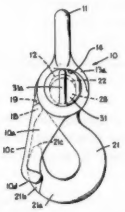
3,785,015
SAFETY HOOK

Robert H. Dorton, P.O. Box 122, Eaton, Ind.

Filed July 26, 1972, Ser. No. 275,223
Int. Cl. A44b *13/00*
U.S. Cl. 24—241 PP 3 Claims

Disclosed is a load carrying hook for hoisting apparatus or the like in which the clevis portion is provided with registering

elongated apertures and the eyelet for the hook portion has a registering circular aperture through which a pivot pin extends. The hook and pin can thus move rectilinearly within the elongated slots in the clevis and cooperating abutments are



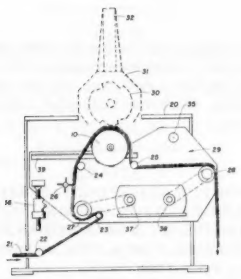
provided on the clevis and the hook. When these abutments are engaged, as occurs when the pin and hook are at one limiting position in the elongated slots, a closure arm carried by the clevis locks closed the open side of the hook.

3,785,016

APPARATUS FOR PRODUCING PATTERNED PILE FABRICS

Heinz Hergert, Frankfurt, Germany, assignor to Polrotor Inc., East Farmingdale, N.Y.

Filed May 27, 1971, Ser. No. 147,585
Int. Cl. D06c *15/00, 23/00*
U.S. Cl. 26—2 R **10 Claims**



A universal fabric conveying unit for processing synthetic pile fabrics, wherein portions of the fabric are selectively presented to the processing equipment to process the various portions differently. The equipment uses a driven pattern roll having profile blocks which can be selectively positioned to control the presentation of a fabric to any one of a plurality of processing elements. The pattern roll assembly is pivotally mounted to adjust its proximity to the processing elements, and means are provided for its withdrawal and re-assembly with new patterns.

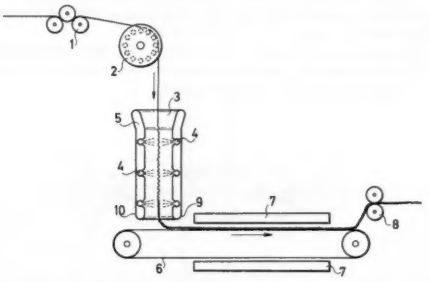
3,785,017

EQUIPMENT FOR THE CONTINUOUS CRIMP DEVELOPMENT OF THREE-DIMENSIONALLY CRIMPED SYNTHETIC FIBERS AND FILAMENTS

Ingolf Jacob; Gert Buttner, and Karl Heinrich, all of Bobingen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed , Ser. No. 248,853
Claims priority, application Germany, May 3, 1971, P 21 21 674.0
Int. Cl. D02g *1/00*
U.S. Cl. 28—1.2 **8 Claims**

An equipment for the continuous crimp development of latently crimped fiber tows made from synthetic linear high molecular weight polymers is described, which contains a drawoff device, a guide device, a heating box having slit nozzles and heated walls, which box is mounted at a distance of at least 50 cm in the line of fall below the guide device. By means



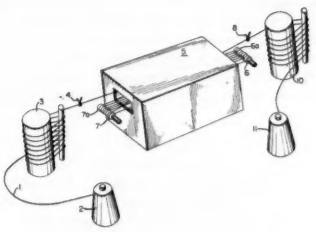
of the steam used for the crimp development flowing through the walls of the heating box, condensation of steam is avoided. The equipment furthermore contains a horizontally moving conveyor belt, another heating box for the after-setting of the crimped fiber tow, as well as a draw-off device.

3,785,018

HOT STEPWISE DRAWING WITH INDEPENDENT FREE-WHEELING IDLER ROLLS

Thomas Carl Bohrer, Charlotte, N.C.; George Franklin Ecker, Toms River, N.J., and David Hsiao Tsung Chen, Wilmington, Del., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,893, Oct. 23, 1968, abandoned. This application Nov. 10, 1970, Ser. No. 88,461
Int. Cl. D02j *1/22*
U.S. Cl. 28—71.3 **5 Claims**



By using at least three independent, free-wheeling idler rolls, high speed hot drawing of orientable synthetic strand material such as polybenzimidazole yarn is accomplished in a more favorable and improved manner as stepwise drawing is permitted in each of the passes through the heating zone; the strand material being drawn wherever the yield point occurs, rather than at a predetermined location for a fixed amount which might not be optimum.

3,785,019

PROCESS FOR PRODUCING LAMPS

Vincent Chiola; James S. Smith, and Clarence D. Vanderpool, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 3,937, Jan. 19, 1970, which is a continuation-in-part of Ser. No. 647,106, June 19, 1967, abandoned. This application Jan. 12, 1972, Ser. No. 217,154
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **3 Claims**

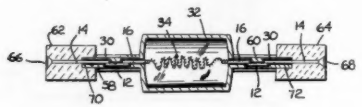
Lamps operating at high temperatures, and more particularly incandescent or arc lamps having sealed-in lead-in elec-

trical conductors with improved service characteristics and longer service life are fabricated with a "coating" on the aforesaid leads comprising at least one of the following: a phosphate or phosphide of tungsten, or a phosphate or phosphide of molybdenum.

Illustrative of the results obtained upon service testing 400-W, 120-V quartz-iodine lamps, at operating temperatures of 500°–600°C., using

A. untreated, uncoated, molybdenum electrode assemblies,

B. platinum-clad, molybdenum electrode assemblies (exemplary of the prior-art techniques), and



C. tungsten phosphate-coated molybdenum electrode assemblies,

are as follows:

A. failed through oxidation and subsequent disintegration, with accompanying seal and lamp failure at 100 hours' operation,

B. failed at approximately 150 hours of life testing,

C. was still operating on a life test after 200 hours.

Processes for forming metal phosphides from metal phosphates and process for coating leads with refractory metal phosphates and phosphides are also disclosed.

3,785,020

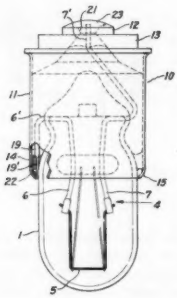
METHOD OF BASING ELECTRICAL DEVICES

Steve Boros, Memphis, Tenn., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,662

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.13 **3 Claims**



A method of electrically connecting an outer wire lead of an electric lamp to the metal shell of the base thereof by flattening a section of the wire lead and soldering the flattened section flatwise to the inner side of the base shell rim.

3,785,021

THIN CHIP CUTTING TOOL

Lars Erik Norgren, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

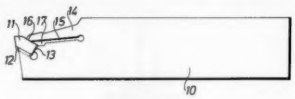
Filed Feb. 18, 1972, Ser. No. 227,422

Claims priority, application Sweden, Mar. 1, 1971, 2547/71

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **2 Claims**

A thin cutting tool comprises a plate-shaped holder having an insert site and an insert secured in said insert site by means of a somewhat resilient clamping arm. One end of the clamping arm is fixed to the holder whilst with its free other end it clamps the insert in the insert site. The clamping force is supplied by bending the clamping arm. Preferably, the clamping arm is tapered from its fixed end to its opposite or free end, with a gradient selected to provide a substantially constant bending stress.



3,785,022

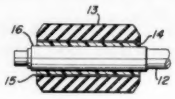
TEXTILE WORKING UNIT

Glenn W. Bowling, Greenville, S.C., and Donald D. Kidd, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 876,410, Nov. 13, 1969, abandoned. This application May 20, 1971, Ser. No. 145,357

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **5 Claims**



A textile working unit having a central shaft with raised bosses having fiber drafting cots adapted for mounting on the bosses. The cot has a rigid core and an outer elastomeric working surface, which may be bonded to the core by means of an adhesive.

3,785,023

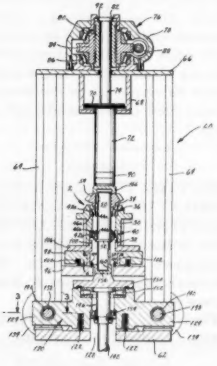
METHOD FOR ADJUSTING TAPERED ROLLER BEARINGS AND FOR ASSEMBLING DEVICES EMPLOYING SUCH BEARINGS AS JOURNALS

William E. Harbottle, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Mar. 23, 1972, Ser. No. 237,462

Int. Cl. B23p *11/00*; **B23q** *17/00*

U.S. Cl. 29—148.4 A **16 Claims**



A shaft is journaled in a shaft housing by means of a pair of tapered roller bearings, and the assembly of the foregoing

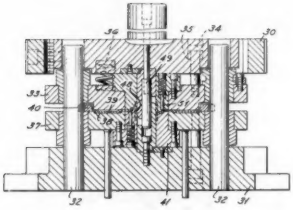
structure, including the adjustment of the tapered roller bearings, is performed on an assembly tool having a fixed anvil and a shiftable pilot base which moves against a spring load toward the anvil. In addition, the tool includes a carriage which shifts axially relative to the anvil against a spring bias and may be locked in a fixed axial position. To assemble the foregoing structure the cone assembly of one of the bearings is fitted against an abutment on the shaft, while the cup of that bearing is seated in the housing. Next the shaft is supported on the shiftable carriage of the tool and thereafter the housing is fitted over the shaft and supported on the pilot base, with its cup receiving the cone assembly. Next an axial force is applied to the housing in the direction which seats the rollers of the bearing, so that the force is transmitted to the shaft through the bearing. The force depresses the pilot base against the anvil while depressing the carriage in opposition to the spring load thereon. Once the pilot base engages the anvil, the carriage is locked in position, and the housing is allowed to return to its initial position so that a prescribed or working point clearance exists between the anvil and pilot base and likewise in the bearing. With the other cup seated in the housing, the remaining cone assembly, which is shiftable along the shaft to effect adjustment of the two bearings, is advanced along the shaft toward its cup, and when the rollers of that bearing seat, a portion of the axial force is transmitted to the housing, and the housing is again depressed along with the pilot base. The advancement is continued until the clearance in the first installed bearing reaches a prescribed value, and that clearance is ascertained by measuring the distance between the pilot base and the anvil. The shaft is rotated slowly as the rollers of the two bearings are seated against their respective cups and cones to insure proper seating.

3,785,024

METHOD FOR FORMING SELF-ALIGNING BEARING STRUCTURES

Benjamin Phillips, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.

Filed May 1, 1972, Ser. No. 249,191
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 B **4 Claims**



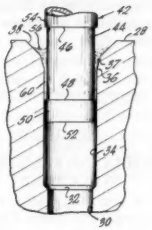
A method for forming self-aligning bearing structures from a workpiece having radially extending fingers to form a bearing having cantilever mounted segments. Each segment has a first portion extending generally radially and a second portion forming a free end extending generally axially so that the segment is yieldable axially. The ends of the segments define a cylindrical supporting surface that engages a spherical contacting surface of a bearing member which has a bore therein for receiving the shaft of the rotor. Alternate segments have their free ends extending generally axially in opposite directions from adjacent segments. Portions of the fingers are engaged to form the free end portions into the second portions extending axially in opposite directions.

3,785,025

METHOD OF CONSTRUCTING A HERMETIC COMPRESSOR DISCHARGE TUBE JOINT

Rudolf Herman Wolf, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 31,503, April 24, 1970, Pat. No. 3,687,019. This application Feb. 22, 1972, Ser. No. 228,065
Int. Cl. B23p *25/00*
U.S. Cl. 29—156.4 R **7 Claims**



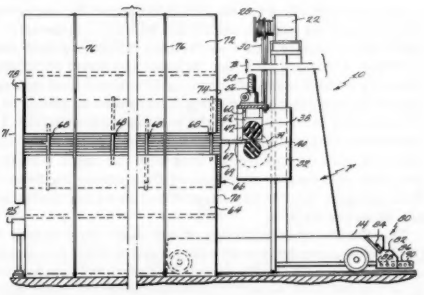
A hermetic compressor discharge line construction wherein the discharge chamber in the cylinder head of the compressor is connected to an external high side outlet by a discharge passageway which includes a discharge muffler and inlet and outlet tubes connected thereto. The muffler inlet tube is joined to the cylinder head by spaced portions of the inlet tube engaging with an interference fit the wall of a bore in the cylinder head. A reduced diameter portion of the inlet tube disposed between the spaced portions defines a clearance space with the bore which is filled with an anaerobic curing adhesive sealant composition. The muffler outlet tube is joined to a discharge conduit by a telescopic connection wherein a male tube end is engaged mechanically at two spaced points in the bore of the female member, the space between the two engagement points likewise being filled with an anaerobic curing sealant composition. These joints are made by outwardly flaring the mouth of the female member, partially inserting the male end in the mouth, placing liquid adhesive in the well defined by the space between the mouth and male tube, and then further inserting the male member until it engages an internal shoulder in the female member.

3,785,026

METHOD OF DISMANTLING TUBE BUNDLES

Gene E. Ohmstede, Beaumont, Tex., assignor to Ohmstede Machine Works, Inc., Beaumont, Tex.

Filed June 7, 1972, Ser. No. 260,443
Int. Cl. B23p *15/26, 19/02, 13/04*
U.S. Cl. 29—157.4 **3 Claims**



This invention is related to an improved method for dismantling tube bundles in a manner more efficient than has hereto-

fore been known in the prior art. The tube dismantling method is capable of effectively removing a plurality of tubes at a single time. The improvement is directed towards locating a tube bundle end that has been cut-off to remove a tube sheet, adjacent and in operative relation to a pair of cooperating parallel rollers. An operator is used to feed successive tubes toward the rollers until they are frictionally engaged thereby. The rollers are rotated in a direction to continue the movement of the tubes from the bundle. After a particular row of tubes has been removed, the rollers are remotely controlled so as to move in a plane perpendicular to the axes of the tubes, and thereby position the rollers in operative relation with another row of tubes to be removed.

3,785,027

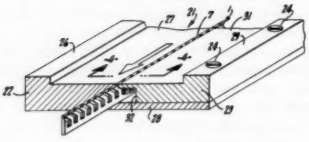
METHOD OF PRODUCING FLUID BEARING TRACK STRUCTURE

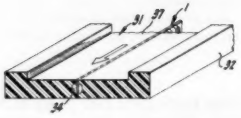
Cecil A. Lasch, Jr., Cupertino, Calif., assignor to Industrial Modular Systems Corporatio, Santa Claro, Calif.

Division of Ser. No. 174,808, Aug. 25, 1971, Pat. No. 3,718,371. This application Aug. 14, 1972, Ser. No. 280,273

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 C **8 Claims**





An improved fluid bearing track structure for supporting and transporting articles on a fluid bearing, components of such track structure, and a method for fabricating such track structure. The track structure includes as a novel component thereof a flexible insert strip having directional fluid passages therein for directing a supporting fluid against an article to be transported over the upper surface of the track structure. The insert strip is frictionally or otherwise held in place in the track structure with its upper edge flush with the upper surface of the track structure so that support fluid emanating from the fluid passages therein may support and move successive articles along the track.

The flexible characteristics of the insert strip permit the track structure to be formed with curved or other non-straight configurations. The track also has bi-directional article movement capability. In its preferred embodiment the insert strip is produced by a chemical etching procedure which allows elongated lengths of insert strips to be inexpensively and accurately produced from various materials.

3,785,028

PROCESS FOR THE PRODUCTION OF HUBS FOR SPIRAL SPRINGS OF TIMEPIECES

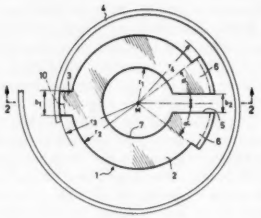
Wolfgang Muller, Schramberg, Germany, assignor to Firma Carl Haas, Schramberg, Germany

Filed Feb. 9, 1972, Ser. No. 224,887

Claims priority, application Germany, Feb. 10, 1971, 2106188

Int. Cl. B23p *13/00*

U.S. Cl. 29—177 **5 Claims**



Hubs for supporting the spiral springs used in timepieces are produced in rough-finished condition by extruding an elongated piece of metal having a cross-section determined by empirical formula which corresponds substantially to the cross-section of the desired fine-finished hub, from which a series of individual hubs, in practically finished condition, is produced by transversely sectioning the extruded material.

3,785,029

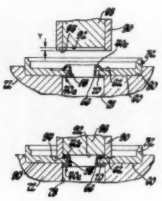
METHOD OF ASSEMBLING INSERTS WITH PRECISION LOOSENESS

Alan J. McClellan, Germantown, Ohio, and Harold R. Dutton, deceased, late of Dayton, Ohio (by Edna M. Dutton, executrix), assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1972, Ser. No. 284,164

Int. Cl. B21k *25/00*

U.S. Cl. 29—157.1 R **4 Claims**



In an illustrative embodiment, a limitedly radially slidable orifice element or insert is assembled within an aperture of a piston end cap of a hydraulic dashpot type of mounting unit for automotive vehicle bumpers. The orifice insert is assembled in the end cap by a method involving the forming of at least one radial flange in a crimping-like operation to tightly engage it and an opposite preformed flange with respective surfaces of the end cap, and subsequently reforming one of the flanges to displace the other a predetermined distance from its respective end cap surface affording precision clearance for relatively free sliding movement of the insert within the end cap.

3,785,030

HYDRAULIC JIG FOR CORRECTION OF MISALIGNMENT BETWEEN JOINTS OF PLATES

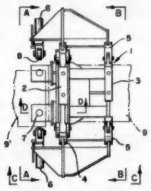
Tatuyuki Une, Hiroshima-ken, and Akira Kamata, Tokyo, both of Japan, assignors to Ishikawajima-Harima Jokogyo Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Osaka Jack Seisakusho, Osaka-shi, Osaka-fu, Japan

Filed Feb. 22, 1972, Ser. No. 227,917

Claims priority, application Japan, Feb. 23, 1971, 46/10804[U]

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 P **2 Claims**



A hydraulic jig for aligning plates edge-to-edge prior to welding provided with a first hydraulic jack for clamping a first plate having a width within a predetermined range in the direction of its width and thickness and also provided with hydraulic jacks for exerting pressure to a second plate in the direction of its width and thickness.

3,785,031

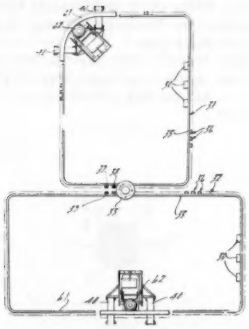
NONSYNCHRONOUS CONVEYOR SYSTEM

Lyman K. Shepard, Upper Saddle River, and Zoltan E. Zilahy, Nutley, both of N.J., assignors to Standard Tool & Manufacturing Co., Lyndhurst, N.J.

Filed July 19, 1972, Ser. No. 273,321

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 A **28 Claims**



The machine has vertical tracks forming one or more continuous loops with or without transfer mechanism therebetween which permits sub-assemblies on fixture mounted pallets on carriers of one loop to be progressively worked upon at stations and transferred to sub-assemblies on pallets of carriers on one or more other loops to continue the assembly operations until the product is completed. The carriers are stopped in a collecting area ahead of the stations and are positively advanced out of and into the stations where the pallet is accurately located and clamped. The work performed at the station is checked to make certain a correct operation was performed and if an indicating flag shows that it was not, the carrier is passed through the stations thereahead. If the station is defective and continues to perform its operation badly, a carrier stop mechanism may be attached to the track ahead of the station to have the operation performed on the workpiece manually until the defect in the station has been corrected.

3,785,032

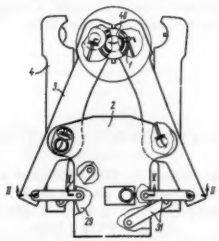
DEVICE FOR PILING ROTOR SHEETS FOR MAGNETIC CIRCUITS OF ELECTRICAL MACHINES

Isaak Yakovlevich Feldshtein, ulitsa Rymarskaya 23, kv. 5; Valery Sergeevich Epifanov, 605 Mikroraion, 20, kv. 22; Vladimir Fedorovich Isygankov, prospekt Pravdy, 7, kv. 160; Alexandr Nikitovich Pashkov, pereulok Rubezhansky, 24; Dmitry Gavrilovich Mogilny, ulitsa Sumskaya, 7/9, kv. 23, and Mikhail Vasilievich Yakovlev, ulitsa Plekhanovskaya, 41/43, kv. 6, all of Kharkov, U.S.S.R.

Filed Feb. 24, 1972, Ser. No. 229,061

Int. Cl. H05k *13/00*; **H02k** *15/00*

U.S. Cl. 29—203 L **3 Claims**



Device for piling rotor sheets for magnetic circuits of electrical machines comprising, a stationary mandrel provided with at least five grooves along its generating line which ensures orientation and lamination of the sheets; wherein at least one of said grooves houses driven rolls, two other grooves house chain conveyers with rollers for catching the sheets, and the last two grooves house, respectively, squeezing rolls to rotate the sheets and orienting means in the form of elastic spring-loaded keys, consisting of strips which are fixed in a row on a flat spring; said stationary mandrel being mounted in a support assembly provided with successively operating pairs of hollow rotating levers whose cavities contain gear trains to link kinematically said driven rolls and said conveyers of the mandrel.

3,785,033

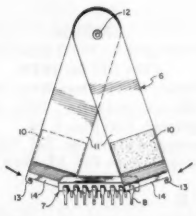
DUAL INLINE PACKAGE HANDLING TOOL

Leonard J. Lynch, 939 S. Seventh St., De Kalb, Ill.

Filed Sept. 28, 1972, Ser. No. 293,061

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 H **8 Claims**



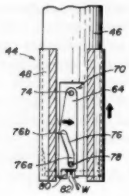
This tool is especially designed for handling dual inline package components as in removal from sockets and circuit

boards, where the terminals are solder connected. The salient feature of this tool is the provision of a pair of flat blades of elongated form, disposed in face-to-face abutting relationship so as to be operable between the thumb and forefinger of one hand, the blades being pivotally connected together at their upper ends and having finger grip surfaces on their outer sides at the lower end above outwardly projecting extensions that carry downwardly reaching vertical jaw portions between which the package to be handled fits, these jaw portions each having on the outer end a downwardly and inwardly extending hook to hook under the end terminals at diagonally opposite corners of the dual inline package, so that the component can be pulled out of the socket or circuit board when the leads are free. The hooks, by virtue of their having contact only with diagonally opposite corners of the component, cannot apply pressure on the center terminals that are close to the integrated circuit chip, and it is a simple matter to open and close the tool between the thumb and forefinger of one hand. In view of the smallness of the tool the operator always has a good view of the entire operation. One size tool will remove several sizes of dual inline packages; for example, the eight, 10, 14, 16, and 18 terminal types. The finger grips enable holding the component quite securely. Closely spaced dual inline packages can be operated upon easily.

3,785,034
WIRE LEAD CUTTER FOR ARMATURE WINDING MACHINE

Glen E. Bucholtz, Tipp City, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Sept. 7, 1972, Ser. No. 286,954
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 C **4 Claims**



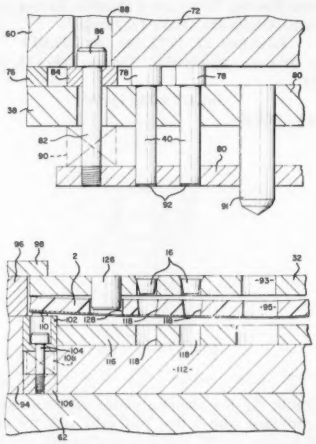
Cutters are mounted for movement within the assembly of commutator shields used in a double flier armature winding machine. The cutters are drivingly connected to a moving shield.

3,785,035
INSERTION OF LINERS INTO HOLES IN PRINTED CIRCUIT BOARDS

Willard Leroy Busler; Milton Dean Ross, both of Harrisburg, and Thomas Edward Schwartzer, York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 741,760, July 1, 1968, abandoned. This application Feb. 12, 1969, Ser. No. 811,269
Int. Cl. H05k *3/00*
U.S. Cl. 29—203 B **4 Claims**

Liners are inserted into holes in printed circuit boards by means of a templet having holes therein at locations corresponding to the holes in the printed circuit board. An excess of liners are placed on top of the templet and the templet is vibrated until one liner enters each hole in the templet.

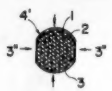


Thereafter, the templet is placed on top of the printed circuit board and the individual liners are punched from the templet holes into the printed circuit board holes.

3,785,036
METHOD OF MANUFACTURING FINE METALLIC FILAMENTS

Yoshiyuki Tada; Hideo Ogita, and Takeshi Yoda, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Higashi-ku, Osaka, Japan

Filed May 17, 1972, Ser. No. 254,124
Claims priority, application Japan, May 17, 1971, 46-33080
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—419 **2 Claims**

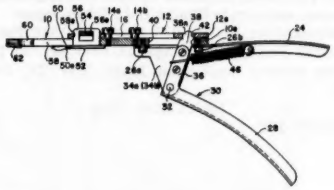


A method of producing fine metallic filaments by covering a bundle of a plurality of metallic wires with an outer tube metal and drawing the resultant composite wire, wherein the outer tube metal on both sides of the final composite wire obtained after said drawing step is cut near to the core filaments present inside the outer tube and then both uncut surfaces of the composite wire are slightly rolled, thereby to divide the outer tube metal of the composite wire continuously and thus separating the outer tube metal from fine metallic filaments. The separation treatment can be effected by a simple apparatus within short time. This reduces the cost of production, and enables the outer tube metal to be recovered in situ.

3,785,037
HAND TOOL FOR ASSEMBLING OPEN, BOWED-BODY RETAINING RINGS HAVING LOCKING PRONGS IN SHAFT OR SPINDLE GROOVES

Hans Erdmann, Maplewood, N.J., assignor to Waldes Kohinoor, Inc., Long Island, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,100
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 H **6 Claims**

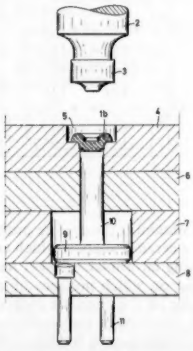


A hand tool mounts plier-like handles at one end of its elongated body member operative through a force-multiplying leverage system to actuate a reciprocatory slide member throughout a working stroke. Said slide member mounts at its relatively forward end ring-grip means effective to spring-grip an open, bowed-body, spring retaining ring having locking prongs projecting from the convex side or face thereof, against the relatively under-face or side of the tool body member, then acting as an extended-length fixed grip jaw. Thus, as the slide member is actuated throughout its working stroke the gripped ring is correspondingly projected (thrust) along a straight-line path terminating in the groove of a shaft or spindle in which said ring is to be assembled. Means are provided for preventing any uncontrolled turning of the ring about its axis during the course of its aforesaid movement with the slide member, and the body member is further provided in its relatively forward end portion with an eye-form shaft or spindle receiving opening. Groove-locating means affixed to the under side of the body member extend into said opening.

3,785,038
PROCESS OF WORKING A SINTERED POWDER METAL COMPACT

Gerhard Zapf, Krebsoge/Rhld., Germany, assignor to Sintermetallwerk Krebsoge GmbH, Krebsoge/Rhld., Germany

Continuation-in-part of Ser. No. 849,354, Aug. 12, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,510
Claims priority, application Germany, Aug. 20, 1968, 1758849
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **5 Claims**

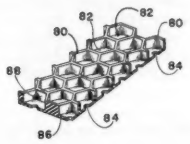


A process of manufacturing articles by means of powder metallurgy, including the conventional steps of forming a blank out of metal powder compressing the blank and sintering it. Pursuant to the disclosure, an additional step is provided, wherein the sintered blank is subjected in a die to one or more further press operations in which the material of the blank is allowed to flow freely in the direction transverse to the direction in which pressure is applied. In this manner the density of the product is increased. Preferably the article is sintered again or annealed after the further press operation or operations to provide it with the required strength characteristics. The additional step is advantageously carried out at room temperature.

3,785,039
METHOD OF FABRICATING CONTINUOUS PRODUCT FROM MOLDED SECTIONS

James E. Huffaker, Kingsport, Tenn.; Ernest L. Myers, Hiltons, Va.; Brian D. Dillon, and Cecil W. Dolen, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 42,106, June 1, 1970, Pat. No. 3,695,573. This application June 27, 1972, Ser. No. 266,581
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 **1 Claim**

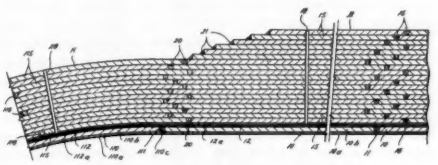


A mold for casting solidifiable materials and method of fabricating a continuous belt from molded sections is disclosed. In the mold, a plurality of apertures are provided in a special pattern, each of which is adapted to receive a core member. The core members are easily removable. Removable end plates are provided which enable the pattern to be continued to the very edge of the mold. A continuous belt mold is fabricated by butting and connecting edges of molded sections.

3,785,040
MULTILAYER PRESSURE VESSEL METHOD

Raymond E. Pechacek, Houston, Tex., assignor to Hahn & Clay, Houston, Tex.

Division of Ser. No. 814,126, April 7, 1969, Pat. No. 3,604,587. This application Apr. 15, 1971, Ser. No. 134,294
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 **3 Claims**



A multilayer pressure vessel method wherein the vessel has both a multilayer cylindrical body and at least one multilayer head, with an inner shell being formed of stainless steel or other metal resistant to hydrogen embrittlement and with the multilayer body and multilayer head being provided with means for relieving hydrogen pressure in the layers externally of the inner shell, whereby the outer layers may be ordinary carbon steel for both the body and the head without danger of hydrogen embrittlement.

3,785,041

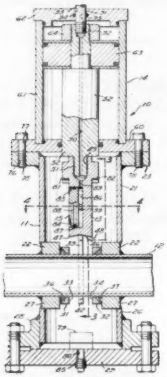
METHOD FOR PLUGGING PIPE

Joseph B. Smith, Cleveland, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Division of Ser. No. 13,295, Feb. 24, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,368

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.3 4 Claims



An apparatus and method for blocking a conduit or pipe carrying fluid under pressure. The apparatus comprises a fluid tight housing adapted to be secured to the exterior of an intermediate portion of the pipe, a cutter or shear within the housing, an actuator for moving the shear through the wall of the pipe, and a sealing surface engageable with a portion of the pipe while the shear extends into the pipe.

3,785,042

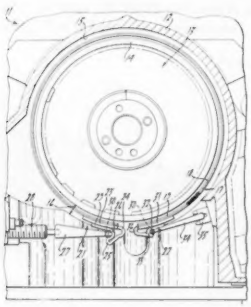
BRAKE BAND END CONNECTION AND METHOD OF MANUFACTURE

Thomas J. Victory, 25167 Harcourt, Farmington, Mich.

Filed May 24, 1972, Ser. No. 256,447

Int. Cl. B23k *31/02*

U.S. Cl. 29—480 5 Claims



An end connection for a brake band used in automatic transmission housings which permits installation of a replacement band without the necessity of removing and dismantling the transmission. The end connection comprises a curved end plate welded to the strap and a low profile strut seat welded to the end plate. A bent back extension on the strap reinforces the strut seat. The construction is such that a popular conventional end connection may be converted to the connection of this invention without new parts being required.

3,785,043

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

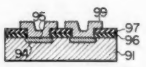
Takashi Tokuyama, Hoya, and Takaaki Mori, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 716,033, March 26, 1968, Pat. No. 3,632,433. This application Apr. 23, 1971, Ser. No. 136,815

Claims priority, application Japan, Mar. 29, 1967, 42-19093

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 2 Claims



A first insulating film of silicon dioxide is provided on the surface of a semiconductor device, and a second silicon dioxide layer containing uniformly a small amount of phosphorus is deposited from the vapor phase on said first insulating film, thereby realizing stable passivation of the electrical characteristics of said semiconductor device. The water-proof property and accurate etching of said films are also accomplished.

3,785,044

METHOD FOR MOUNTING INTEGRATED CIRCUIT CHIPS ON INTERCONNECTION SUPPORTS

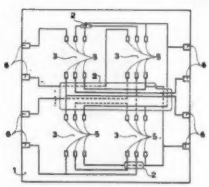
Franco Forlani, Monza, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Nov. 2, 1971, Ser. No. 194,829

Claims priority, application Italy, Nov. 17. 1970, 31828A/70

Int. Cl. B01j *17/00*

U.S. Cl. 29—591 3 Claims

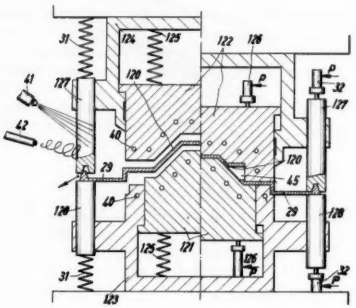


A method for obtaining the precise positioning of semiconductor chips on a ceramic support which employs an auxiliary support comprising an insulating sheet having openings provided therein and on which portions of conductors forming the beam leads for all the chips are etched from an adherent aluminum sheet. Portions of the conductors extend over the opening, and are subsequently welded to the chip and the terminal pads on the ceramic support prior to being severed from the auxiliary support.

3,785,045
METHOD OF CASTING AND SUBSEQUENTLY DEBURRING OF WORKPIECES AND A DEVICE FOR CARRYING OUT THE METHOD

Walter Reis, Frankenstrasse 1, Obernburg, Germany

Filed Apr. 27, 1972, Ser. No. 248,051
Claims priority, application Germany, May 14, 1971, P 21 24 142.9; Jan. 12, 1972, P 22 01 353.2
Int. Cl. B23p *17/00, 23/04*
U.S. Cl. 29—527.6 10 Claims



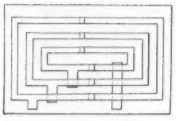
A method of producing castings and subsequently deburring and also machining the castings if necessary. According to this method, the castings are removed from a casting machine while still in a hot state and conveyed by a gripper assembly to a deburring machine. This machine includes a pattern device into which the hot casting is placed. The device is slowly closed as the casting cools thereby shrinking the casting upon the pattern. As a result, appreciable deformation of the casting is effectively prevented. When the casting is substantially cooled and has thus reached its final configuration it is deburred in the deburring machine and if necessary surface finished.

There is also disclosed a device for carrying out the aforedescribed casting and deburring steps in automated sequence.

3,785,046
THIN FILM COILS AND METHOD AND APPARATUS FOR MAKING THE SAME

Thomas A. Jennings, Sutton, Coldfield, England, assignor to Hull Corporation, Hatboro, Pa.

Filed Mar. 6, 1970, Ser. No. 17,157
Int. Cl. H01f *19/00*
U.S. Cl. 29—602 7 Claims

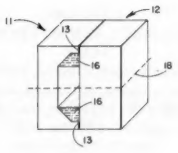


Thin film inductance coils, separately or in transformer combinations, are made by depositing on a substrate from vapor sources directed through selected apertured masks, superimposed layers of alternate films of electrically conductive metal and electrical insulating material in successive segments of each of a plurality of coil turns.

3,785,047
METHOD OF MANUFACTURING MAGNETIC READ-WRITE HEADS

Donald M. Ackley, Torrance, Calif., assignor to Computer Communications, Inc., Culver City, Calif.

Filed Oct. 27, 1970, Ser. No. 84,383
Int. Cl. G11b *5/42*; H01f *7/06*
U.S. Cl. 29—603 4 Claims

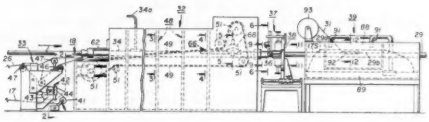


A magnetic head has a thin magnetic gap in which there is a highly conductive non-magnetic material which is deposited on the gap face portion of at least one of the two magnetic pole pieces of the head. This head is fabricated by depositing thin conductive layers of equal thickness on spaced surface portions of one of the pole pieces and by joining together the two pole piece members to form an integral unit, with the deposited conductive layer portions of one pole piece abutting against opposed parallel flat surfaces of the mating pole piece so as to form a thin uniform magnetic gap therebetween. The unit is then cut crosswise to provide an open ended arm portion over which a prewound coil is placed, and finally a wide gap which appears opposite the narrow gap is bridged with a magnetic member to complete the magnetic circuit.

3,785,048
METHOD AND APPARATUS FOR FORMING AN UNSOLDERED SHEATH ABOUT A STRAND

Warren Eugene Petersen, Omaha, Nebr., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,021
Int. Cl. H01b *13/26, 13/16*
U.S. Cl. 29—624 14 Claims



In the forming of an unsoldered sheath about a strand, such as a cable core assembly, in which the strand is advanced longitudinally through an elongated tube and in which a corrugated metal tape for sheathing the strand is advanced therewith and folded about the periphery of the tube so as to envelop the strand as the strand exits from the tube, edge portions of the metal tape are overformed into a relatively sharp curved configuration. Subsequently, the edge portions are reverse-formed to a curved configuration similar to that of an intermediate portion of the tape and are overlapped. Radial inward pressure then is applied to an edge section of the advancing tape to form it inward and to cold-work the edge section so that it achieves a permanent set. At the same time, the inner edge portion of the tape is deflected radially inward to facilitate this forming of the edge section, and then is permitted to return into tight-fitting engagement with the edge section whereby the overlapped edge portions form a tight seam. Preferably, the strand is sheathed in two corrugated metal tapes, and a non-adhesive corrosion inhibitor is initially coated on one side of a first tape while air jets preclude flow of the inhibitor onto the opposite side of the tape. The coated side of the first tape then is brought into meshing engagement

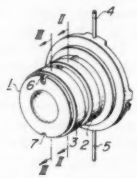
with a second tape and the two tapes are formed about the strand with the uncoated side of the first tape facing outward. Subsequently, the outer side of the first tape is coated with a corrosion inhibitor having adhesive qualities, to facilitate bonding of an extruded plastic jacket to the tape. An overlay tape also may be embedded in the second corrosion inhibitor over the seam formed by the overlapped edge portions of the tape.

3,785,049

SLIP RING ASSEMBLY AND METHOD OF MAKING SAME

Hisanobu Kanamaru; Yasushi Ohuchi, and Hideo Tatsumi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,923
Claims priority, application Japan, May 15, 1970, 45-40942
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 **13 Claims**



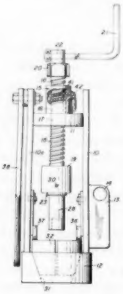
A slip ring assembly in which principal components, a molded cylindrical base, conductive rings and terminals are separately manufactured and assembled together. In assembling, the terminals are fitted in diametrically spaced grooves formed on the cylindrical base and the conductive rings are press-fitted on the cylindrical base thereby to bring the conductive rings into pressure contact with the respective terminals and to ensure satisfactory engagement of the conductive rings with the cylindrical base.

3,785,050

COUPLING ATTACHMENT DEVICE

Jon K. Whitledge, Mantua, and Edward M. Kavick, Chardon, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed Jan. 7, 1972, Ser. No. 216,093
Int. Cl. B23p *19/02*
U.S. Cl. 29—237 **6 Claims**



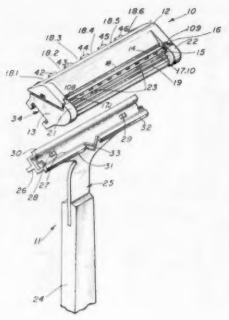
An apparatus is provided for fastening a fitting to the end of a hose having a ball nut and ball screw carrying a pusher means for pressing a fitting and hose assembly into a swaging die, the pusher means comprising a bearing which transfers the force of the rotating screw to the non-rotating pusher means.

3,785,051

DISPENSING SYSTEM FOR BONDED RAZOR BLADE CARTRIDGES

Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris-Plaines, N.J.

Continuation-in-part of Ser. No. 191,665, Oct. 22, 1971. This application Mar. 21, 1972, Ser. No. 236,723
Int. Cl. B26b *21/24;* **A45d** *27/24*
U.S. Cl. 30—40.2 **17 Claims**



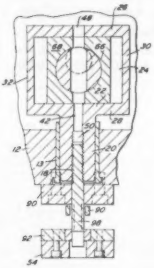
The specific disclosure provides a dispensing system for bonded razor blade cartridges comprising a dispenser, a plurality of disposable cartridges in the dispenser, and a holder. Each of the cartridges has a T-shaped channel formed transversely thereof, and the holder has a plurality of supporting surfaces formed transversely thereof for sliding engagement with the T-shaped channel. The dispenser has a plurality of guide surfaces for aligning the supporting surfaces of the holder with the T-shaped channel of at least one of the cartridges. Means are also provided on the dispenser for abutting stop means on the holder when the supporting surfaces are in an improper alignment and for clearing the stop means when the supporting surfaces are in a proper alignment.

3,785,052

HEAVY DUTY NIBBLER

Israel J. Yermis, Philadelphia, Pa., assignor to Fenway Machine Co., Philadelphia, Pa.

Filed June 27, 1972, Ser. No. 266,805
Int. Cl. B26b *15/00*
U.S. Cl. 30—241 **10 Claims**



A heavy duty nibbler possessing certain improvements over the nibbler tools of U. S. Pat. Nos. 2,888,744, 2,967,355 and others, including a punch that is threadedly seated in a main body part such that it is not necessary to remove any parts when the punch is threadedly withdrawn from the bottom of the main body part. The punch is of half-moon shape so that

the punch makes an initial partial cut into the work. The portions of the punch are angularly related such that the punch is divided into an extending leg having a flattened edge and a main stem with an inclined edge, the angle between the flattened edge and the inclined edge lying between 81° and 83°.

The heavy duty nibbler tool further includes a bronze guide sleeve that replaces the nosepiece of U. S. Pat. Nos. 2,888,774 and 2,967,355. The bronze guide sleeve will guide the plunger or ram, thereby preventing the punch from running off center.

In the present invention the die is provided with ripples to prevent the metal from backing out, and the die holder is provided with a concave surface.

Furthermore, the stripper mechanism is adjustable through the addition of stripper plates in 1/16 increments. Thus, the stripper can be adapted for different thicknesses of the work by simply inserting one or more plates in the top of the stripper.

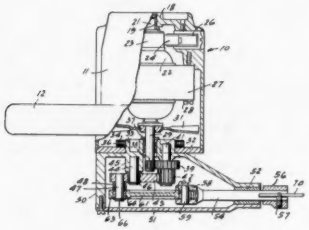
Finally, the main driven gear is provided with a series of openings to eliminate backlash.

3,785,053

COMBINATION SAW

Dennis M. Michaelson, Chicago, Ill., assignor to Pan-Technic, Inc., Chicago, Ill.

Filed July 7, 1972, Ser. No. 269,767
Int. Cl. B27b *19/08*
U.S. Cl. 30—394 **4 Claims**



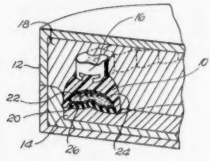
A combination saw which can be used as a saber or jig saw and which has a main body portion with a handle and a power output portion rotatable to different angular positions relative to the main body portion and handle.

3,785,054

LINING FOR ARTIFICIAL DENTURES

Ambrose B. Van Handel, 8653 Louis Ave., Northridge, Calif.

Continuation-in-part of Ser. No. 17,329, March 6, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,263
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **9 Claims**



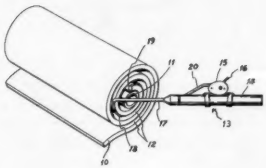
An artificial denture incorporating as resilient lining on its base, silicone rubber denture base material containing more than 2 percent and less than 10 percent by weight, based on the silicone rubber, of methylmethacrylate polymer. A vinylsilane or acryloxyalkylsilane can be added in an amount sufficient to increase the bonding of the silicone rubber to the denture base.

3,785,055

CARPET MEASURING APPARATUS

Lloyd E. Anderson, 3123 Upton Ave. North, Minneapolis, and Gilbert L. Alinder, 5312 Shoreview Ave. South, Minneapolis, Minn.

Filed Feb. 22, 1971, Ser. No. 117,429
Int. Cl. G01b *3/02*
U.S. Cl. 33—128 **3 Claims**



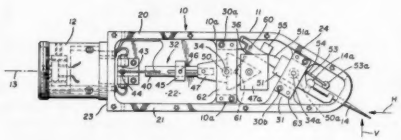
An apparatus and method for measurement of coiled material in situ is provided wherein a tube is inserted between the convolutions of the coiled material. A cord member having a means for attaching the end thereof to the inner end of the material to be measured passes through the tube. The tube is spirally passed around the convolutions of the coiled material, unwinding cord as it travels. A measure of the cord unwound gives the length of material in the coil.

3,785,056

STATICALLY BALANCED PROBE ASSEMBLY

Frederick S. Schiler, Stow, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed Mar. 26, 1971, Ser. No. 128,367
Int. Cl. G01b *5/20*
U.S. Cl. 33—169 R **4 Claims**



A probe unit for use with Layout and Inspection machines and like measuring apparatus with the improvement relating to the use of a pivoted mechanical linkage that results in a desired mechanical advantage to achieve increased sensitivity, and further relating to the use of counter-weights to statically balance the pivoted linkage components of the probe so as to permit usage in a vibratory environment without effecting the operation of the probe.

3,785,057

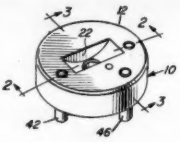
WORKPIECE EDGE AND CORNER LOCATING TOOL

George W. Streander, Alamogordo, N. Mex., assignor to Design SYSTEMS, Inc., Alamogordo, N. Mex.

Filed Oct. 21, 1971, Ser. No. 191,187
Int. Cl. G01b *5/25*
U.S. Cl. 33—169 R **12 Claims**

A gauge body defining a reference axis and including first, second and third abutments disposed in and spaced about a 180 degree sector extending about the reference axis. The first and second abutments are disposed on opposite sides of the axis and include corresponding abutment surfaces facing in the same direction disposed in a diametric plane of the reference axis and the adjacent sides of the third abutment and one of the other abutments are disposed in radial planes of

the reference axis angularly displaced 45° apart while the opposing surfaces of the third abutment and the other of the first and second abutments are disposed in radial planes of the reference axis angularly displaced 90° apart. Also, a fourth



abutment is provided and is spaced generally radially of the reference axis from the third abutment and includes remote side surfaces contained in the same radial planes of the reference axis in which the opposite side surfaces of the third abutment are disposed.

3,785,058

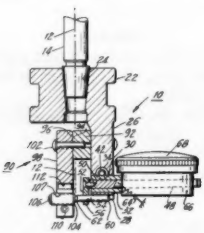
APPARATUS FOR AND METHOD OF CALIBRATING WORKPIECE SENSOR AND FOR ALIGNING SENSOR AND WORKPIECE

Henry O. Egli, 76 Riverside Dr., Sidney, N.Y.

Filed May 13, 1971, Ser. No. 143,020

Int. Cl. B23b *49/00*; **G01b** *5/02*

U.S. Cl. 33—172 D **13 Claims**



Machine tool and workpiece alignment apparatus using a sensing element connected with a sensitive indicator to align the sensing element both with the center line of the tool spindle and with a location on the workpiece. The sensing element is offset positioned to sense thin workpieces. A recalibration assembly is attached to the apparatus for being periodically moved into engagement with the sensing element to facilitate recalibration. Methods of initially calibrating and of recalibrating the apparatus are also disclosed.

3,785,059

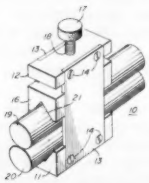
ROD GAUGE AND HOLDER

Mederic J. Breau, 236 Lincoln St., Saugus, Mass.

Filed Nov. 23, 1971, Ser. No. 201,498

Int. Cl. G01b *3/50*

U.S. Cl. 33—178 B **8 Claims**



A rod gauge and holder with rods clamped together between two V-blocks in a framework in order to use the combined diameters of the rods to form a fixed gauge of the go or no-go type for testing a dimension of an opening in a work piece.

3,785,060

WALL PANEL LAYOUT APPARATUS

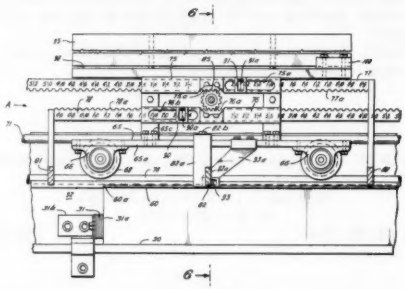
Lloyd E. Brewer, P. O. Box 8158, Corpus Christi, Tex.

Division of Ser. No. 848,634, Aug. 8, 1969, Pat. No. 3,628,232.

This application Sept. 17, 1971, Ser. No. 181,346

Int. Cl. G01b *5/00*

U.S. Cl. 33—191 **7 Claims**



A wall panel layout apparatus for laying out bottom and top plates for any size house or similar building, whereby wall panels may be assembled rapidly and accurately by relatively inexperienced personnel.

3,785,061

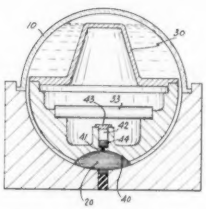
MAGNETIC COMPASS OR LIKE INDICATING INSTRUMENT

Douglas V. Carroll, Ottawa, Ontario, and Ramsis I. Attia, Winipeg, Manitoba, both of Canada, assignors to FMC (Canada) Limited, Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 827,376, May 23, 1969. This application Mar. 10, 1971, Ser. No. 122,684

Int. Cl. G01c *17/08*

U.S. Cl. 33—364 **7 Claims**



An inner indicating member immersed in a liquid can turn with three axes of rotational freedom in a spherical housing. A body of mercury at the bottom of the housing forms a captive pool in a recess of the member for holding the same erect in the housing.

3,785,062

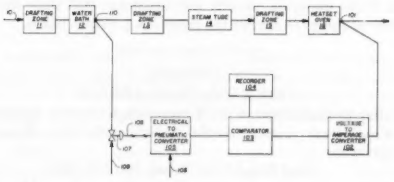
METHOD AND APPARATUS FOR CONTROLLING THE MANUFACTURE OF SYNTHETIC FIBERS

Donald L. Finley, and Edward A. Morehead, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 257,406, May 26, 1972. This application Dec. 27, 1972, Ser. No. 319,103

Int. Cl. F26b *5/00*

U.S. Cl. 34—34 **11 Claims**



Disclosed is a method of controlling the processing of a continuous length filamentary tow of synthetic fibers wherein the tow is moved through a water bath, drafted, and subsequently moved through a heatsetting chamber wherein the tow is heatset, the method of controlling the processing comprising

A. sensing the temperature of the fibers leaving the heatsetting chamber and generating a first signal reflective of the magnitude of the sensed temperature of the fibers,

B. comparing the first signal with a signal reflective of a desired temperature for the fibers leaving the heatsetting chamber and generating a second signal reflective of the magnitude of the result of the comparison, and

C. responsive to the second signal, removing water from the wet fibers entering the heatsetting chamber to allow the fibers to achieve the desired temperature.

In a preferred embodiment a thermocouple is used to sense the temperature of the fibers leaving the heatsetting chamber and water is removed from the wet fibers entering the heatsetting chamber by positioning a horizontally extending jet body member at the downstream exit from the water bath, then guiding the two from the water bath to that portion of the surface of the jet body member wherein there is located an opening through which air is blown and then removing water from the fibers by blowing air through the opening. This invention is particularly applicable to the manufacture of high tenacity poly(ethylene terephthalate).

3,785,063

PROCESS AND APPARATUS FOR DEHYDRATING MOISTURE CONTAINING MATERIAL

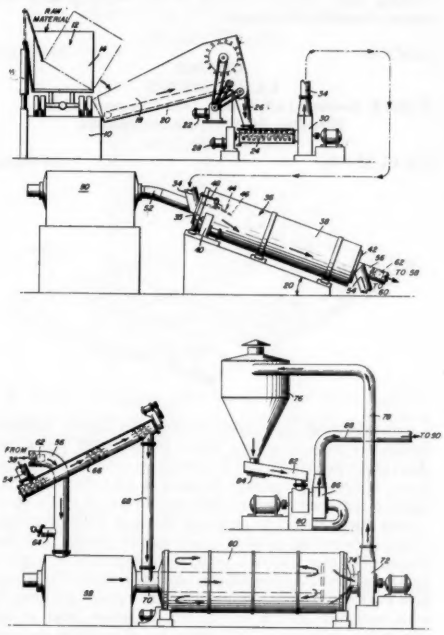
Ralph W. Bishop, 1620 S. Ocean Dr., Fort Lauderdale, Fla.

Filed Oct. 6, 1971, Ser. No. 187,087

Int. Cl. F26b *11/02*

U.S. Cl. 34—128 **6 Claims**

Apparatus for performing a process of dehydrating moisture-containing material for processing into animal feed has the steps of predrying a comminuted moisture-containing material by subjecting the material to a heated gaseous current, and drying the predried material by subjecting same to a heated gaseous current. Apparatus for carrying out this process has a conditioner for subjecting a comminuted moisture-containing material to a heated gaseous current to predry the material, and a main dryer in communication with the conditioner for further subjecting the material to a heated gaseous current to dry the material to a predetermined level. The conditioner may be a single pass dryer, and the main dryer a multipass dryer.



3,785,064

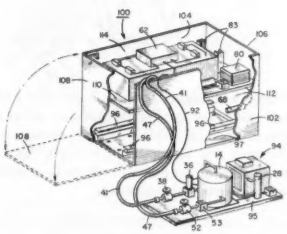
AIR-CONDITIONING SIMULATION SYSTEM AND METHOD

Sanford E. Thomas, Jr., Houston, Tex., assignor to Dyna-Kool Corporation, Houston, Tex.

Filed July 7, 1972, Ser. No. 269,640

Int. Cl. G09b *25/02*

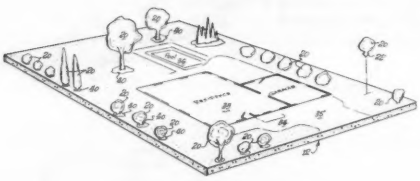
U.S. Cl. 35—13 **7 Claims**



A method and apparatus for simulating the normal and abnormal operating conditions in an air-conditioning system comprising a plurality of mechanically and electrically operated working units functionally interconnected into a thermodynamic loop, including a plurality of simulating components responsive to control signals from a central control

station for simulating desired conditions. The station includes a female receptacle for receiving a programmed plug-in board thereby automatically and simultaneously affecting the state of energization of certain of the simulating components and working units whereby certain of the working units will operate in an abnormal mode.

3,785,065
LANDSCAPE KIT
Walter E. Kamm, 514 S. College Ave., Claremont, Calif.
Filed June 21, 1972, Ser. No. 264,884
Int. Cl. G09b *25/04*
U.S. Cl. 35—16 **14 Claims**



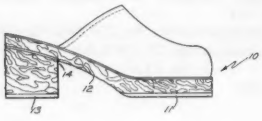
Accurate small scale colored cardboard cutouts depicting shrubs and trees have base spikes for insertion into a base sheet of foamed plastic that is colored green to represent lawn areas. A white crayon may be used to coat the green base sheet to represent cement walks and driveways and a brown crayon may be used to represent the bare earth of planted areas. A swimming pool or a fish pond is shown by a blue crayon. The plan area of a house and garage may be depicted by a paper sheet cut to scale and adhesively bonded to the surface of the base sheet. Numerous plant cutouts are provided with individual indicia on the cutouts which refer to corresponding indicia on a descriptive list of available trees and shrubs.

3,785,066
MODULAR PAPER SCULPTURES
Milton Tuitt, 356 Peoria St., Daly City, Calif.
Filed July 19, 1971, Ser. No. 163,670
Int. Cl. A63h *33/16*
U.S. Cl. 35—72 **5 Claims**

A construction element is constructed from a sheet of foldable material and provided with a plurality of face panels having a common apex. The element is symmetric about a line through the apex and manipulable to form three-dimensional geometric modular elements with which to construct complex geometric ornaments and sculptures.

3,785,067
MOLDED SHOE AND REINFORCEMENT THEREFORE
Fernando M. Ronci, 2 Atlantic Blvd., Providence, R.I.
Filed Sept. 13, 1972, Ser. No. 288,644
Int. Cl. A43b *1/10*
U.S. Cl. 36—4 **3 Claims**

A molded woman's shoe having a thick sole and a bulky high heel. To reinforce the shank and prevent breakage at its connection with the heel, a hardened steel strip is molded into the shoe. The strip extends from the upper portion of the heel, through the shank, and partly into the sole. The strip is provided with a central, longitudinal stiffening rib and a plurality of openings adjacent the periphery. When the shoe is molded, the mold material, usually polyurethane, will pass through these openings to anchor the reinforcing strip in place.



3,785,068
INNER SOLE FOR SANDALS
Walter Bretschneider, Uerzell-Neustadt, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Jan. 19, 1972, Ser. No. 218,913
Claims priority, application Germany, Jan. 21, 1971, 2102715
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **9 Claims**

A sandal, especially for ladies, which has an inner sole made of bending and walking elastic material and also has an approximately U-shaped frame connected to and covering that peripheral portion of the inner sole which extends from the ball section of the inner sole rearwardly to the heel region of the sandal, said frame being united to the heel.

3,785,069
FOOTWEAR
John William Brown, 23, Goatstown Rd., Dublin, Ireland
Filed July 12, 1972, Ser. No. 271,112
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **24 Claims**

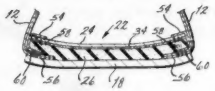
An insole for a boot or shoe which has an enclosed air containing cavity in at least the heel portion and a valving opening for the cavity. The insole is resiliently deformable to vary the internal volume of the cavity. In use, on application of the wearer's weight to the heel portion, the valving opening is closed and the air within the cavity is compressed until equilibrium is achieved. When the wearer's weight is transferred from the heel portion to the toe portion, the air can flow out of and into the cavity and the insole resumes its original shape. The invention also provides a boot or shoe which incorporates this insole as an integral portion of the sole of the boot or shoe.

3,785,070

CUSHION INSOLE FOR SHOES

Cleo Stafford, 705 W. 10th St., Corning, Ark.

Division of Ser. No. 190,497, Oct. 19, 1971, Pat. No. 3,707,784. This application Oct. 30, 1972, Ser. No. 302,145
Int. Cl. A43b *13/38, 3/12*
U.S. Cl. 36—44 9 Claims



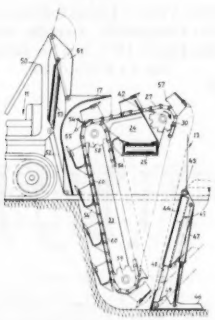
A composite insole for shoes is disclosed including a generally rigid upper layer and a resilient and compressible lower layer which underlies the upper layer throughout and is laminated thereto. Spaced upper elements of a shoe are impressed through a binding element, attached to the insole, into the resilient and compressible lower layer in order to provide a substantially uninterrupted bottom binding surface to which a shoe outsole is attached. Heel attachment, without openings, and with a smooth, sculptured appearance for the shoe upper is also disclosed.

3,785,071

MULTI-BUCKET EXCAVATING MACHINE

Hans Schaeff, 7183 Langenburg, Germany

Filed Mar. 2, 1972, Ser. No. 231,228
Claims priority, application Germany, Mar. 3, 1971, 2109993
Int. Cl. E02f *5/06*
U.S. Cl. 37—90 16 Claims



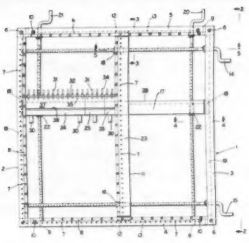
A trench-digging machine for attachment to a general-purpose carrier vehicle, the vertically moveable frame of the machine enclosing an upright bucket conveyor whose elements are carried by two separate endless chain pairs which move upwardly in a parallel path and separate on their upper reversal, the outer chain pair carrying cutting yokes, while the inner one carries buckets. The buckets may move independently at a higher speed than the cutting yokes, or they may be synchronized at the same pitch, so that the cutting yokes and the partial buckets on the inner chain pair form composite buckets which open conveniently for emptying, as the chain paths separate. The machine may further include a drag support with a hydraulically controlled glide shoe pressing against the bottom of the trench to stabilize the carrier vehicle.

3,785,072

NEEDLEPOINT BLOCKING DEVICE

Fred P. Meyer, Coral Springs, Fla., and Donald W. Meyer, Sharpsville, Pa., assignors to Meyer Enterprises, Inc., Sharpsville, Pa.

Filed Nov. 10, 1972, Ser. No. 305,560
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.5 8 Claims



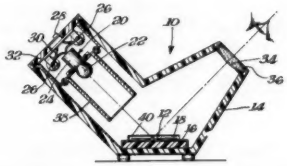
An outer rectangular frame having intermediate members adjustable between opposite outer side members to provide a canvas engaging rectangular stretching frame of any desired size having four flush canvas enagaging frame members on which a needlepoint canvas of any size may be engaged and stretched for blocking the canvas to truly rectangular shape. Canvas engaging pins project from two side and one intermediate frame members; and staple pins are hinged to the other intermediate frame member and engage over the top of and through the canvas at one edge of the canvas. Crank arm screws are journaled in opposite side members and have screw thread engagement with the intermediate members to adjust the latter toward and away from the side members. The intermediate members normally are maintained parallel with the side members between which the intermediate members are movable. The staple mounting intermediate frame member has a series of removable blocks of varying lengths to provide staple zones variable by uniform increments on said staple mounting member.

3,785,073

NEGATIVE PROOF VIEWER

George K. Van Tine, 905 Harvey Rd., Claymont, Del.

Filed Dec. 27, 1971, Ser. No. 212,608
Int. Cl. G09f *13/10*
U.S. Cl. 40—63 A 2 Claims



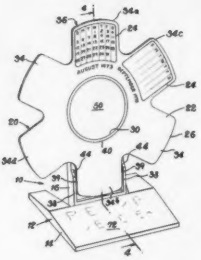
Negative proof viewer for viewing negatives and seeing them as positive pictures comprises a casing with support structure inside said casing for holding photographic negatives. A light source inside said casing is spaced from said support structure and said source is constructed and arranged to direct a beam of light onto a photographic negative on said support structure. A lens associated with said casing is located in the path of light reflected from said photographic negative on said support structure.

3,785,074

CALENDAR DISPLAY CONSTRUCTION WITH INDEXING CALENDAR BEARING MEMBER

Edward B. Halperin, Wayland, Mass., assignor to Penn Products Corporation, Randolph, Mass.

Filed Dec. 7, 1972, Ser. No. 311,704
Int. Cl. G09d *3/08*
U.S. Cl. 40—113 **13 Claims**



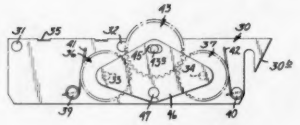
A calendar construction in which a lobed, resiliently flexible calendar-bearing annular disk is mounted for rotation upon a pedestal-supported drum and retained on the drum by a radially narrow lip which enables selective removal and replacement of the disk by forcing the disk over the lip. The disk may be indexed to a selected position where a portion of the calendar is at a predetermined viewing location, and abutments engage a lobe to retain the disk at that position. A relatively large display surface is provided at the viewable end of the drum for displaying advertising copy, other information or decorative effects.

3,785,075

MINIATURE SCROLL WINDING AND DISPLAY DEVICE

Walter G. Naylor, Jr., Sioux City, Iowa, assignor to Diane Dider Enterprises, Inc., Sioux City, Iowa

Filed Aug. 17, 1971, Ser. No. 172,526
Int. Cl. G09f *11/24*
U.S. Cl. 40—94 **1 Claim**



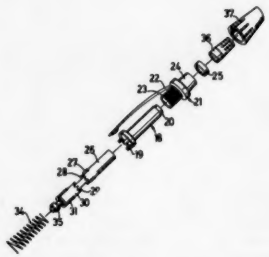
A cigarette lighter is shown having a recess in one edge thereof. A frame having a guide wall and a pair of parallel, rotatable arbors is mounted in the recess. A scroll having its ends coupled to the arbors extends over the guide wall. Gears are mounted on the arbors to control movement of the scroll. Resilient means are mounted on the frame to hold the scroll in a taut configuration. A cover member conforming to the normal configuration of the lighter is releasably secured over the recess to hold the frame in place. A window is provided in the cover member in line with the guide wall to permit viewing of the scroll, a manually actuable gear extends through a slot in the cover member to permit positioning of the scroll.

3,785,076

ADJUSTING MECHANISM FOR PERPETUAL CALENDARS

Wallin K. Swensson, Furuhajdsvagen 9, Huddinge, Sweden

Filed Nov. 5, 1971, Ser. No. 195,987
Int. Cl. G09f *9/00*
U.S. Cl. 40—335 **2 Claims**



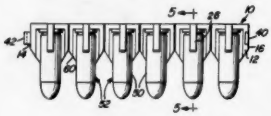
An adjusting mechanism for calendar pens comprises a pen barrel having an interior toothing near its bottom, and two hollow members, being rotatably adapted within said barrel, one of them bearing indications for years and weekdays and the other indications for dates and months, the former having at one end a toothing cooperating with the toothing of the pen barrel and at its opposite end a reversed toothing cooperating with a similar toothing of the second member, said second member having at its opposite end coupling means for cooperation with a rotatably but not displaceable adjusting member, a spring being adapted to press said first and second member against each other and towards the toothing of the pen barrel.

3,785,077

REVOLVER CYLINDER RELOADER

Joe C. Price, 4913 Princeton St., Amarillo, Tex.

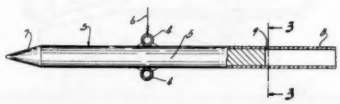
Filed Feb. 7, 1972, Ser. No. 224,073
Int. Cl. F42b *39/04*
U.S. Cl. 42—89 **10 Claims**



An elongated strap of shape retentive, resilient and deformable material which may be rolled up into position with its ends in end abutted relation to form a hollow generally cylindrical body at least substantially closed at one end and including a plurality of elongated longitudinally extending fingers arranged in a concentric circular pattern within the body. The fingers are formed integrally with the body and project from the closed end thereof toward the open end thereof. The opposing surfaces of the fingers and circumferentially spaced inner wall portions of the body define cylindrical recesses in which to endwise seatingly receive the base ends of cartridge shells. The length of the fingers from the closed end of the body to the free ends of the fingers is considerably less than the axial extent of the cylindrical body defined by the rolled strap and when the open end of the body is abutted against the rear of a revolver cylinder and forward pressure is applied to the center of the closed end of the body cartridge shells within the recesses defined by the body are at least partially ejected from the recesses whereby the cartridge shells are displaced

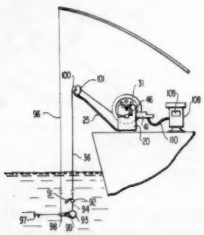
toward the more flexible free ends of the fingers and the friction of the fingers on the imposing inner surfaces of the body on the cartridge shells is reduced to allow the latter to fall by gravity from the recesses when the body is oriented in a downwardly opening position.

3,785,078
FISHING BAIT SINKER
Carl R. Seitz, 2806 E. Allerton, St. Francis, Wis.
Filed July 6, 1971, Ser. No. 159,877
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.14 **6 Claims**



A sinker which is to be attached to a fishing line ahead of the bait and for causing the bait to sink in the water. The sinker has a tapered and pointed nose and is suspended from the line at a point forward of its midpoint length. That portion of the sinker located behind the attaching point is formed of a lighter weight, less dense material than the main body of the sinker, and the rear portion acts to maintain the sinker in a position with its pointed nose up-stream.

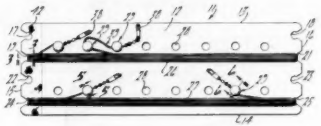
3,785,079
DEEP TROLLING REEL WITH TEMPERATURE MONITORING CAPABILITY
William C. Rohn, P.O. Box 288, St. Joseph, Mich.
Filed Oct. 20, 1972, Ser. No. 299,584
Int. Cl. A01k *89/00*
U.S. Cl. 43—4 **12 Claims**



A reel for deep trolling utilizes a coaxial electrical cable as the bait positioning line in conjunction with a shielded thermistor which is connected mechanically and electrically to the cable near its weighted end. The provision of slip rings and a simple phone jack on the reel mounting bracket enables monitoring of one or more reels by means of a single thermocline meter. The reel additionally features a positive pin lock and a convenient adjustable friction brake or drag. The length of cable payed out from the reel is conveniently measured by counting reel revolutions. Other convenience features are included.

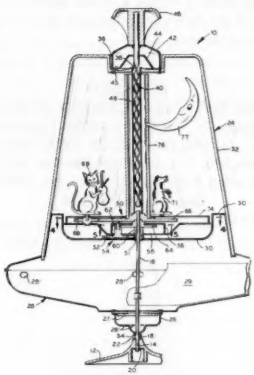
3,785,080
HOLDER FOR FISHING LEADERS
Maynard Wallace, 38172 Seaway Dr., Mt. Clemens, Mich.
Filed Nov. 22, 1972, Ser. No. 308,758
Int. Cl. A01k *97/06*
U.S. Cl. 43—54.5 R **10 Claims**

A flat rectangular panel with pairs of aligned notches in its opposite edges for winding and storing fishing leaders. Rows of holes are formed in the panel, and slotted plugs can be placed over the leader ends and snapped into the holes to hold the leaders in place. In a modified form of the invention, a



third set of notches is provided for holding hooks at the ends of the leaders.

3,785,081
TOY SPINNING TOP
Larry J. Burkhart, Edon, Ohio, assignor to The Ohio Art Company, Bryan, Ohio
Filed Aug. 20, 1971, Ser. No. 173,572
Int. Cl. A63h *1/26*
U.S. Cl. 46—66 **11 Claims**

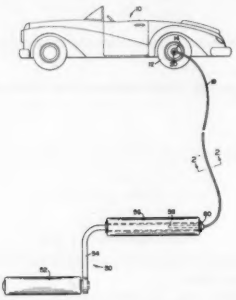


A top having a hollow partially transparent rotating body mounted on a stationary base and driven by a vertical reciprocating screw axially located in the body, a horizontal stationary scenic plate or platform within the body, a reduction gear unit within and driven by the rotating body and disposed below the scenic plate, an object supporting tubular column around the screw within the body and rotated by the gear unit, and at least one rotating figure within the body above the stationary scenic plate having its axis of rotation parallel to the tubular column and being driven by the gear unit, whereby the object, body, column and/or figure all rotate at different speeds and/or directions to each other.

3,785,082
FILAMENT ACTUATED VEHICLE
Emanuel A. Winston, 190 A Skokie Valley Rd., Chicago, Ill.
Filed July 10, 1972, Ser. No. 269,954
Int. Cl. A63k *30/00*
U.S. Cl. 46—210 **7 Claims**

A wheeled toy vehicle including a drive assembly which comprises a monofilament line having one extremity connected to a manually operable control means and the opposite end connected to the running gear of the vehicle. The dimensions and configuration of the monofilament line is such as to transmit rotation of the line about its own longitudinal axis, caused by activation of the control means, directly to the running gear which may comprise a drive axle and/or one or more drive wheels. Connecting means may attach the one ex-

tremity of the line to a predetermined outer portion of an axle or wheel by means of forming a socket therein correspondingly shaped to at least partially enclose a finger attached to the extremity of the line means cooperating



therewith. Alternately, a finger can be connected to the extremity of the drive axle and be disposed so as to be enclosed within a socket formed within a sleeve which is connected to the extremity of the line and comprises another embodiment of the connecting means.

3,785,083

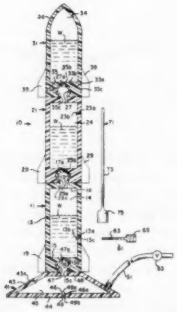
REACTION TOY ARRANGEMENT AND METHOD

Reginald F. Pippin, Jr., 7806 Ruxway Rd., Towson, Md.

Division of Ser. No. 102,294, Dec. 29, 1970, which is a division of Ser. No. 504,300, Oct. 24, 1965, Pat. No. 3,550,313. This application Aug. 15, 1972, Ser. No. 280,824

Int. Cl. A63h *27/06*

U.S. Cl. 46—74 C **39 Claims**



A fluid discharge reaction-propelled toy missile arrangement capable of formation in multiple stages or units releasably interconnected as a function of internal propulsive pressure in the succeeding stages or as a function of internal propulsive pressure in the succeeding stages or units, or capable of individual unit single stage use, if desired. A self-sealing lateral inlet valve separate and spaced from the fluid discharge propulsion orifice of an individual missile unit enables individual unit pressurization from an external fluid pressure source. Missiles are launched from a launching unit which may have a fluid pressurizing inlet and a fluid pressurizable releasable missile-holding connection, or may have other releasable missile-holding connection, and launch simulation enhancement can be provided, if desired, by controlled-release lateral liquid spray from one or more discharge orifices in the launching unit and separate from the fluid pressurizing inlet therefor.

3,785,084

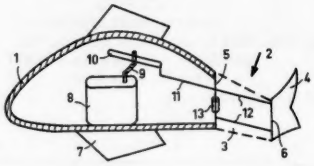
SELF-PROPELLING AQUATIC TOY

Martin W. Aenishanslin, Baluan-Strasse 42, Basel, Switzerland

Filed July 5, 1972, Ser. No. 269,179

Int. Cl. A63h *23/10*

U.S. Cl. 46—92 **10 Claims**



Self-propelling aquatic toy, for example a fish adapted to "swim" in water, having a body portion and a tail portion, the latter including a driven intermediate and a non-driven terminal member, the former being swiveled by an electric motor within the body portion, while the terminal tail member is limp and freely pivotable with respect to the intermediate tail member, so that the toy performs a life-like "swimming" movement in the water, the terminal member swiveling in a direction opposite to the movement imparted to the intermediate member.

3,785,085

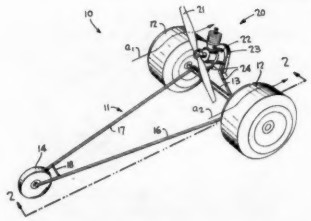
MODEL VEHICLE FOR ERRATIC ACTION

Gary J. Peroni, Key Biscayne, Fla.

Filed Nov. 18, 1971, Ser. No. 200,118

Int. Cl. A63h *17/00, 17/26*

U.S. Cl. 46—206 **9 Claims**



A self-motivating toy vehicle capable of erratic behavior comprising relatively large main support wheels, flexible tricycle frame means, a smaller forward action wheel, and propulsion means attached so as to locate the center of gravity and the direction of the propulsion vector in positions which promote vehicle instability when moving, and especially when the influence of said action wheel moving over uneven terrain is present. The action wheel may be resilient or spongy in order to enhance bouncing.

3,785,086

SELF-STEERING BICYCLE-TYPE TOY VEHICLE

Francisco Escobedo, 23305 Ladeen Ave., Torrance, Calif.

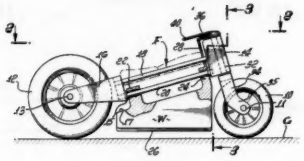
Filed Jan. 2, 1973, Ser. No. 320,084

Int. Cl. A63h *17/36, 33/26*

U.S. Cl. 46—213 **10 Claims**

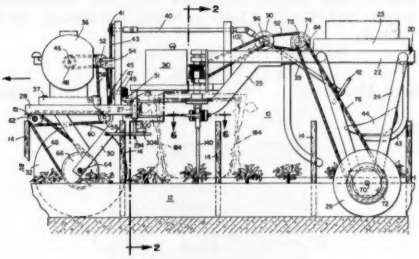
A tandem-wheeled bicycle-type toy capable of self-steering so as to maintain sufficient balance as to remain upright as long as moving longitudinally. May be started by being shoved or allowed to roll down a ramp, or may contain a spring motor or a battery-operated electric motor. Rear non-swerving wheel mount is connected to upstanding post of forward wheel assembly by vertically separated pair of forwardly upslanted

rods. Mounted laterally-swingable on the lower rod is a longitudinal, weighted member which at its forward end fixedly supports a transversely upstanding alignment plate having an arcuate slot traversed by the upper rod and having a top arcuate edge formed with gear teeth. An angularly upstanding spindle is journaled in the post dependently carrying a forward guide wheel. At its top the spindle carries a generally horizontal, semicircular steering plate having gear teeth engaging those of the alignment plate. Accordingly, as the moving cycle



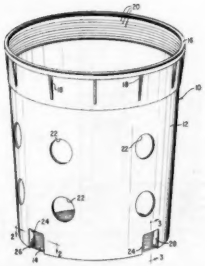
leans to one side or the other in response to a slanted or uneven track, the pivoted wheel(centered below the axle level of the rear wheel) swings to the "down" side and the arc of mutually engaging teeth correspondingly turns the upstanding spindle and guide wheel in the same direction so as to correct the balance of the ongoing cycle. Optionally the cycle may have a flat-faced rear wheel which additionally tends to straighten the vehicle so as to accommodate to a slanted or curved track.

3,785,087
TOMATO PLANT TYING MACHINE
Robert Lewellyn Cook, Lake Worth, Fla., assignor to Flavor Pict, Inc., Del Ray Beach, Fla.
Filed Nov. 16, 1971, Ser. No. 199,292
Int. Cl. A01g *17/08*
U.S. Cl. 47—1 **11 Claims**



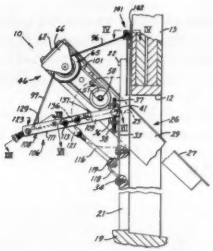
A machine for supporting tomato plants and like plants between lengths of twine tied to vertical stakes, to support the tomato plants during their period of growth, facilitating harvesting and increasing the plant yield. The machine utilizes a stationary needle member and a rotating needle member to feed two lengths of twine, with the strings being tied at each stake, as the machine passes a stake. The machine includes a tensioning mechanism associated with the feed roll of twine for each of the two needles, to maintain a uniform tension on the string as it unwinds from the roll, a rotating brush to brush plants out of the path of movement of the rotating needle, and means responsive to the position of a stake to initiate the tying cycle.

3,785,088
NURSERY POT
Theodore J. Guarriello, 33 Van Blarcom Ln., Wyckoff, N.J.
Filed Feb. 26, 1973, Ser. No. 335,521
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **5 Claims**



A nursery pot having a first series of vertically and circumferentially spaced, relatively large openings in the side wall of the pot, and a second series of openings at the juncture of the side wall and the bottom of the pot. Both series of openings permit drainage of excess moisture from and entry of ambient air into the pot to promote root growth, with the second series of openings being bounded by inwardly directed flanges for the purpose of directing root growth in the vicinity of the second series of openings inwardly toward the center of the pot rather than outwardly through the bottom openings.

3,785,089
DOOR OPERATOR
Wesley A. Smith, Island of Drummond, Mich.
Filed July 14, 1972, Ser. No. 272,021
Int. Cl. E05f *15/00*
U.S. Cl. 49—139 **19 Claims**



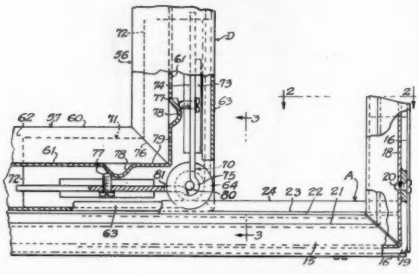
A power operated tilting door system for opening and closing a portal in a building includes a door and pivot elements in the building mounting the door for tilting movement on a horizontal axis. A winch and a motor for rotating the winch are carried by the door adjacent the upper edge thereof. An elongate strand wraps around the winch, one end of the strand being secured by a quick release unit to the building and the other being secured to the door remotely from the winch. A strand tension member is mounted on the building and extends therefrom to a position, near the winch location when the door is open, for supporting the portion of the strand between the winch and the other end of said strand. The ends of the strand and the tension member are located to equalize the required length of the strand at all positions of the door. Limit switches are fixedly mounted with respect to the building for engagement by an actuator pivotable with the door so as to de-energize the motor at the fully open and fully closed positions of the door.

3,785,090

METAL WINDOW CONSTRUCTION WITH CLAMPED CORNER JOINTS

Donald J. MacGillis, 1821 Old Ranch Rd., Los Angeles, Calif.

Filed Mar. 20, 1972, Ser. No. 236,027
Int. Cl. E05d *13/02*
U.S. Cl. 49—425 **10 Claims**



A metal window structure including frame and vent (sash) members with unwelded corner joints embodying corner brackets of dihedral L-form, secured by screw and clamping attachments of frame and vent bars. In the corner joint of a sliding vent the clamping structure includes a mounting for rollers which locates the rollers in the extreme corners of the vent. Clamping force, applied by screws on axes 90° apart, with a camming action against ramps on the sash bars, draws mitred ends of the bars together under compression to rigidify the corner.

ERRATUM

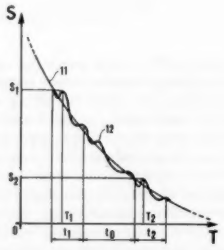
For Class 051—009 see:
Patent No. 3,785,105

3,785,091

DEVICE FOR DETECTING THE SPEED OF REMOVAL OF THE CHIPS IN A GRINDING MACHINE

Mario Pozzetti, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. In Accomandita Semplice de Mario Possati & C., Bentivoglio, Italy

Filed Jan. 19, 1972, Ser. No. 219,016
Claims priority, application Italy, Jan. 20, 1971, 3312/71
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 R **6 Claims**



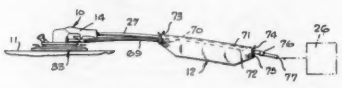
A device for detecting the speed of removal of the chip from a workpiece in a grinder comprising a measuring member adapted to detect at each moment the dimension of the part being machined, and characterized by first memory means for memorizing a first dimension of the piece being worked, second memory means for memorizing the second dimension of the piece at a predetermined period of time from the detection of said first dimension, and means for forming the difference between the two memorized values, said difference representing the quantity of material removed in said predetermined interval of time.

3,785,092

ABRADING TOOL HAVING SUCTION SYSTEM FOR COLLECTING ABRADED PARTICLES

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif.

Filed Dec. 28, 1971, Ser. No. 213,018
Int. Cl. B24b *23/00, 55/06*
U.S. Cl. 51—170 MT **16 Claims**



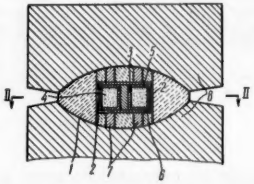
A portable tool for sanding or otherwise abrading a work surface and having an air motor which drives the abrading part or unit, with an air suction system being provided for sucking dust and other abraded particles from the work surface to prevent their escape into the surrounding air, and with the suction effect desirably being created by energy derived from the exhaust of the air motor, preferably through an aspirator action.

3,785,093

METHOD OF BONDING DIAMOND WITH REFRACTORY CERMET MATERIAL

Leonid Fedorovich Vereschagin, Kutuzousky prospekt, 10/9, kv. 231; Jury Sergeevich Konyafv, ulitsa Fersmana II, kv. 26, both of Moscow; Alexandr Vasilievich Dovbnya, Podolskyraion, Akademgorodok, ulitsa Tsentralnaya, 10, kv. 112, Moskovskaya Oblast; Evgeny Valentinovich Polyakov, Belyaevo-Bogorodskoe, 39. kv. 73, Moscow; Novgorodov, Alexandr Stepanovich, Timviyazevskaya ulitsa, 34, korpus I, kv. 51, Moscow; Abdulia Ogly Asan-Nuri, Naberezhnaya Shevchenko, ½ kv. 118, Moscow; Polikarp Avtonomovich Paly, ulitsa Zoi i Alexandra Kasmo-demyanskikh, 4, kv. 316, Moscow, and Grigory Sergeevich Gevorkov, Oktyabrsky propekt 365, kv. 34, Ljubertsy Moskovsko Oblasti, all of U.S.S.R.

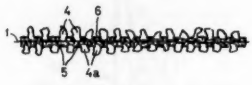
Filed Dec. 21, 1970, Ser. No. 100,119
Int. Cl. B24d *3/06, 3/14*
U.S. Cl. 51—307 **2 Claims**



The diamond and cement materials to be sintered are placed in a hermetic graphite sheathing which is, in turn, arranged inside a sheathing of some low-melting metal. The latter is to be made from a metal whose melting point is lower than the temperature at which diamond will be sintered with the cermet material. The filled-up graphite sheathing is placed into a high-pressure reaction chamber and heated up until the low-melting metal gets soft. Thereafter the temperature and the pressure are raised until they are adequate for diamond to be sintered with cermet material. The softened sheathing of the low-melting material is a hydrostatic medium which pro-

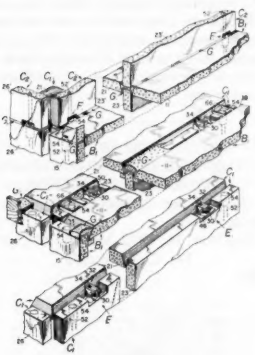
vides for a uniform distribution of pressure and temperature over the entire volume of materials being sintered.

3,785,094
ABRASIVE MEDIUM
Rudolf Holzhauer, Marienheide/Rhld., Germany, assignor to Firma August Ruggeberg, Rhineland, Germany
Continuation-in-part of Ser. No. 115,164,, Feb. 16, 1971. This application Aug. 25, 1971, Ser. No. 174,655
Claims priority, application Germany, May 11, 1971, P 21 23 126.5
Int. Cl. B24d *11/00*
U.S. Cl. 51—401 **7 Claims**



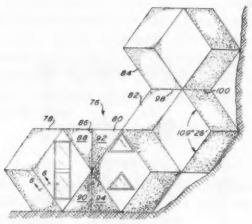
A flexible grinding tool made up a synthetic resin impregnated fiberglass mat with a layer of abrasive grains attached to both surfaces of the mat by a synthetic resin binder containing short fibers of glass, asbestos, ceramic material or graphite therein.

3,785,095
MULTI-UNIT FOLDING SLAB CONSTRUCTION
Edwin Abercrombie Verner, 2922 Derby, Berkeley, Calif.
Continuation of Ser. No. 842,322, July 16, 1969, abandoned. This application July 16, 1971, Ser. No. 163,462
Int. Cl. E04b *1/344*
U.S. Cl. 52—70 **15 Claims**



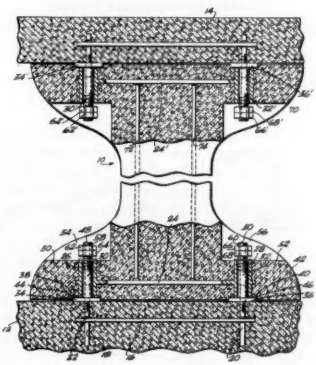
A structural support for supporting two ceiling panels upon a base wall panel. One edge of each ceiling panel has protuberances rigidly conjoined thereto which span outwardly and over the upward edge of the wall panel for supporting the ceiling panels. The protuberances of one ceiling panel are hingeably conjoined to the wall panel to allow pivotal movement therebetween during the erection procedure. The supporting interconnection provided by the protuberances and underlying supporting walls permits successive building units to be stacked in columnar relation with abutment between overlying walls, and grout to be placed between the supported panels to integrally conjoin the wall panels of the joint as erected.

3,785,096
MODULAR BUILDING
Charles P. Neuhardt, Philadelphia, Pa., assignor to Interface Systems, Limited, Philadelphia, Pa.
Filed Mar. 15, 1971, Ser. No. 124,382
Int. Cl. E04h *1/02*
U.S. Cl. 52—79 **6 Claims**



A modular building whose external shape comprises at least a major portion of a dodecahedron, the faces of the dodecahedron being rhombic and of like shape and area.

3,785,097
ADJUSTABLE ANCHOR BOLT & BLOCK BUILDING AND LEVELING MEANS
William B. Seymour, 110 N.E. 160th St., Miami, Fla.
Filed Nov. 6, 1972, Ser. No. 304,101
Int. Cl. E04g *21/10*
U.S. Cl. 52—126 **14 Claims**

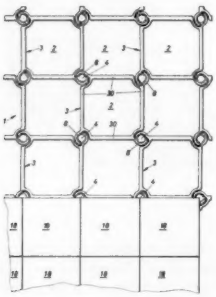


Anchor bolt means for a building whereby all vertical or horizontal structural components such as columns and floor slabs, either reinforced concrete or steel, are securely anchored and leveled by means of simple bolt adjustments. Steel anchor plates, including outwardly projecting anchor bolts, are embedded in concrete footings, floor slabs, beams or columns and when any two or more of the above components are joined, adjustment nut means are provided to perfectly align and level all of the main structural components relative to each other. Additionally, all of said components are continuously tied together by steel reinforcing members.

3,785,098
COMPOSITE PANEL STRUCTURE

Hans E. Schweitzer, and Ernst Huber, both of Wettingen, Switzerland, assignors to H. E. Schweitzer AG, Wettingen, Switzerland

Filed June 4, 1970, Ser. No. 43,385
Claims priority, application Switzerland, July 1, 1969, 10048/69. The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed.
Int. Cl. E04c 2/42
U.S. Cl. 52—663 17 Claims

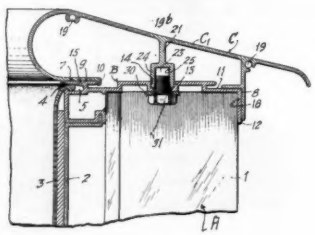


A frame of individual square elements, of which only diagonally opposite elements meet at their corners to form openings in which are held bolts having at their heads spring members that enter, and releasably lock in, recesses provided in the corners of square panels that register with the square elements.

3,785,099
SWIMMING POOL COPING

Samuel Greene, 18 Underwood Dr., West Orange, N.J.

Filed Sept. 18, 1972, Ser. No. 290,267
Int. Cl. E04h 3/18
U.S. Cl. 52—102 5 Claims

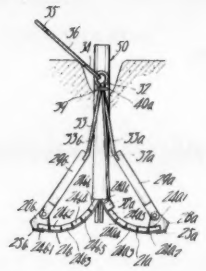


Coping structure for a swimming pool includes a plurality of sections relatively slidably adjustable on a support member with provisions at the ends of the sections for alining and holding the sections in alinement. Each section has a downwardly extending longitudinal flange intermediate its width with a channel in its edge the interior surfaces of whose side walls have ridges and grooves to coact with the screw threads of cap screws that pass through holes in the support member at the bottom of a groove of approximately the same width as said flange whereby upon driving of the screws into the channel the walls of the flange are drawn tightly into the groove.

3,785,100
GROUND ANCHOR

Hikoitsu Watanabe, No. 5-13, 1-chome, Ehara-cho, Tokyo, Japan

Continuation-in-part of Ser. No. 86,814, Nov. 4, 1970, Pat. No. 3,662,505. This application Apr. 7, 1972, Ser. No. 242,036
Claims priority, application Japan, May 10, 1971, 46/30425
Int. Cl. E02d 5/80
U.S. Cl. 52—162 4 Claims

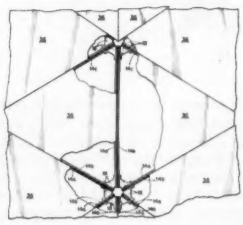


A three- or four-point support type ground anchor is provided which may be easily driven into and positively set in the ground and may provide the maximum effective earth bearing surface area. The ground anchor comprises an inverted U-shaped resisting or earth bearing plate whose leg portions or resisting members may be bent outwardly in the opposite directions from each other successively along several horizontal lines. Until the ground anchor is driven to a predetermined depth, the bending of the resisting plate, that is the resisting members are prevented by a pair of driving-control rods so that they may be straightly driven into the ground. After the ground anchor has been driven to a predetermined depth, the driving control rods are released so that the resisting members may come off the control rods and follow the curved paths in the opposite directions. The load from the structure through a guy strand may be positively supported by the resisting plate, a pair of lift plates, and a pair of lift rods joined to the lower ends of the resisting members and an auxiliary rod or rods joined to the upper end of the resisting plate.

3,785,101
CONSTRUCTION FOR SPHERICAL STRUCTURE AND COMPONENT THEREFOR

William W. Ahern, Belmont, Mass., assignor to Geometrics, Inc., Cambridge, Mass.

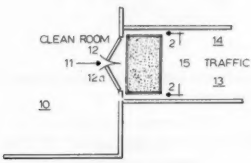
Filed Mar. 16, 1972, Ser. No. 235,159
Int. Cl. E04b 1/32
U.S. Cl. 52—81 1 Claim



A construction for a generally spherical structure of the type commonly referred to as a "radome." The construction includes a plurality of triangular frame assemblies, each of which is made up of elongated frame members attached to

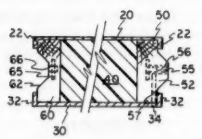
connecting devices located at the apexes of each frame assembly. The frame assemblies are covered by triangular membrane panels. One frame-membrane assembly is joined to another by means extending laterally through adjacent frame members and the connecting devices to which the adjacent frame members are attached. The invention also encompasses the individual connecting devices.

3,785,102
TACKY FLOOR PAD
Homer C. Amos, Palm Springs, Calif., assignor to Edward T. Strickland, Palm Springs, Calif., a part interest
Filed Nov. 1, 1971, Ser. No. 194,623
Int. Cl. A47l *23/22*
U.S. Cl. 52—173 **23 Claims**



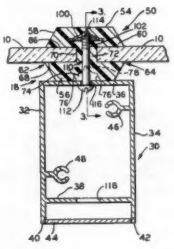
A throw-away pad, especially for use at the entrance to a clean area but not exclusively for such use. Of multiple ply construction, it comprises a plurality of very thin polyethylene or polypropylene sheets, of suitable surface size and shape to receive at least a pair of shod feet. Each sheet bears a very thin coating of pressure-sensitive adhesive on its top surface. The bottom surface of the pad, that is, the bottom of the lowermost sheet thereof, also is coated with adhesive so that the pad, when in use, is removably adhered to the floor. The pressure-sensitive adhesive has a low modulus of elasticity, a high internal viscosity and high surface free energy, so that it firmly and aggressively grabs dirt from shoes of wheels passing over it, yet each sheet can be readily peeled off after use to expose a fresh adhesive surface to further traffic. The entire pad or stack is thin to present no hazard or obstacle to foot or to wheeled vehicles, e.g., to a gurney being wheeled into an operating room.

3,785,103
BUILDING PANEL WITH LATCHING MEANS
Hamish Turner, 576 Otis Blvd., Spartanburg, S.C.
Filed Jan. 3, 1972, Ser. No. 214,538
Int. Cl. E04b *1/41*
U.S. Cl. 52—309 **7 Claims**



An improved building panel is disclosed comprising a foam core having bonded to opposite sides thereof an outer skin or cover plate. The outer skins are bent along the two longwise edges thereof and receive a wooden edging member therebetween, the edging member being bonded to both the outer skins and the foam core. The edging members are preferably tongue and groove, i.e., having a tongue construction along one longitudinal edge of the panel and a groove construction along the opposite longitudinal edge of the panel. The tongued edging has a plurality of latch means disposed therealong while the grooved edge has a plurality of matching latch pins disposed therealong, said tongue and groove construction and latches and latch pins enabling a rigid connection between adjacent panels. A superior panel is produced that avoids delamination under extreme conditions. The bond is produced by a two adhesive system. A first adhesive is applied to the foam core and a second adhesive is applied to the outer skins and edging members. The foam core adhesive must be compatible with the foam and the second adhesive and preferably is a water base polychloroprene adhesive. The second adhesive, applied to the outer skin and edging is a solvent based adhesive which is normally incompatible with the foam. When the two adhesives are brought together in a virtually non tacky state, however, the foam core adhesive prevents destruction of the foam by the solvent based adhesive and, upon curing, the two adhesives provide a superior laminate bond. A process for manufacturing the panel is also disclosed and claimed.

3,785,104
PANEL SEALING SYSTEM FOR INTERNAL GLAZING
John A. Dailen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Filed Nov. 15, 1971, Ser. No. 198,630
Int. Cl. E04b *2/62*
U.S. Cl. 52—400 **3 Claims**

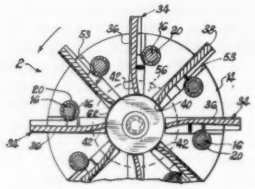


Means are provided for permitting internal glazing for panel mounting systems of the type wherein elastomeric gasket members which include panel receiving channels therein are disposed about openings in buildings or the like to support thin rigid construction panels in predetermined desired positions. In the subject invention, a plurality of rigid means are molded integrally into at least those gasket members used to support the edges of adjacent construction panels. These rigid means are adapted to be used in affixing the gaskets to associated rigid construction members extending around and/or spanning the opening as well as providing rigidity for the panel mounting gaskets to prevent panel roll out when high negative lateral forces are received against the construction panels.

3,785,105
CENTRIFUGAL BLASTING WHEEL
Ardee H. Freeman, Granger, Ind., assignor to Wheelabrator-Frye, Inc., New York, N.Y.
Filed Apr. 5, 1972, Ser. No. 241,226
Int. Cl. B24c *5/06*
U.S. Cl. 51—9 **9 Claims**

A centrifugal blasting wheel is provided which permits rapid and easy blade removal and replacement by providing: a control cage and impeller which can be removed from a central opening defined by the inner ends of the radially extending blades; a blade holding means which utilizes the spacers hold-

ing the wheel side plates apart to engage a holding shoulder on the blades to prevent further radial outward movement; and a removable centering plate mounted in the central opening to prevent radial inward movement.



3,785,106

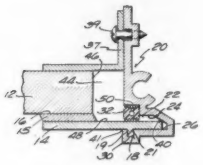
GLAZING FLANGE ATTACHMENT SYSTEM

Frederick M. Fink, McHenry, Ill., assignor to Continental Aluminum Products Company, McHenry, Ill.

Filed Oct. 6, 1971, Ser. No. 186,849

Int. Cl. E06b *3/60*

U.S. Cl. 52—476 **4 Claims**



A snap-in metal glazing flange for a window or building panel is initially separate from a supporting frame member which is provided with a longitudinal slot for receiving the side margin of the glazing flange. A notch in one of the slot walls receives a locking and locating projection or rib on the glazing flange. A compressible vinyl spline is pressed between the glazing flange and a stepped shoulder in the slot to secure the projection in the notch and lock the glazing flange in the appropriate overlapping position on the window or panel margin. The spline is removable to release the flange for replacement of the window or panel. An inclined or tapered camming abutment at the end of the slot engages the side edge of the glazing flange and moves the projection into the notch as the flange is inserted in the slot and prevents angular displacement of the glazing flange in the slot.

3,785,107

POST AND POST BASE ASSEMBLY

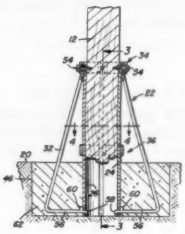
George W. Garretson, Rt. 3, Box 260, Ocala, Fla.

Division of Ser. No. 45,176, June 10, 1970, Pat. No. 3,683,739. This application Aug. 15, 1972, Ser. No. 280,891

Int. Cl. E04c *3/30*

U.S. Cl. 52—514 **5 Claims**

A repair assembly including a first post repair structure and a second repair structure for attaching horizontal fence members to fence posts. The first structure includes an upstanding split clamp sleeve with downwardly divergent bracing legs for clamping about the rotted lower end of a fence post and embedding in ground anchored concrete and the second structure includes an endless, formed and tensioned wire loop arranged to twice horizontally embrace the side of a corresponding fence post remote from the related fence boards and twice vertically embrace the fence board side remote from the corresponding fence post.



3,785,108

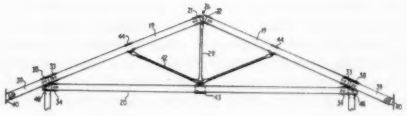
ROOF TRUSSES

Eric William Satchell, Cammeray, New South Wales, Australia, assignor to Duraframe Systems Pty. Ltd., New South Wales, Australia

Filed Jan. 6, 1972, Ser. No. 215,839

Int. Cl. E04c *3/11*

U.S. Cl. 52—645 **6 Claims**



A roof truss has two top chords and a bottom chord extending therebetween. The upper ends of the top chords are received in separate ridge sockets which are pivotally attached so as to form a ridge fitment. The lower ends of the top chords are each received in the upper socket of spaced bottom fitments, each bottom fitment also having a lower socket which respectively receive the ends of the bottom chord. The respective upper and lower sockets are arranged for pivotal movement relative to each other over a selected range of pitch angles. The respective upper and lower sockets may be maintained at any selected pitch angle within this range by inserting a bolt through any selected set of aligned holes provided therein.

3,785,109

STRUCTURAL ARRANGEMENT

Guy Letourneur, Mareil-Marly, France, assignor to Coparfi, Rueil-Malmaison, France

Filed Dec. 8, 1971, Ser. No. 205,931

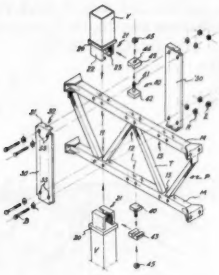
Claims priority, application France, Dec. 18, 1970, 7045779; Nov. 12, 1971, 7140572

Int. Cl. E04b *1/18, 1/343;* **E04c** *3/04*

U.S. Cl. 52—633 **9 Claims**

A structural arrangement for connecting one or more vertical posts to a horizontal girder. A connection is fixed to the end of the vertical post and designed so as to transmit the compressive forces resulting from axial loading. Two ties are mounted on the girder at opposite sides thereof and have their

ends adapted to provide bearing surfaces for the vertical post connection. Means are provided for locating the connection in



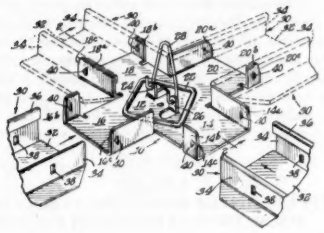
alignment with the ends of the ties to prevent lateral disengagement.

3,785,110

MODULAR CEILING CONNECTOR

Lawrence H. Galloway, Barrington; Leonard E. Harast, and Frank V. Pliml, Jr., both of Cicero, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 14, 1971, Ser. No. 106,508
Int. Cl. E04b *5/52*
U.S. Cl. 52—715 **4 Claims**



The present invention relates generally to improvements in modular connectors for horizontal runners of a ceiling grid system, and more particularly to improvements in modular connectors comprising a one piece sheet metal stamping. The embodiment of the invention disclosed in the present application includes a central sheet metal plate section having a plurality of integral arms radiating therefrom. Each arm presents a plate portion having integral flanges extending upwardly from opposite margins thereof for telescopically accommodating the extremity of a complementary grid channel member. Means is also provided for accommodating the lower extremity of a vertically disposed grid suspending member such as a wire.

ERRATUM

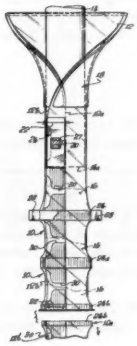
For Class 052—748 see:
Patent No. 3,785,114

3,785,111

METHOD OF FORMING CONTAINERS AND PACKAGES

Brian R. Pike, Monterey Park, Calif., assignor to William S. Schneider, Glendale; Carl F. Schneider, Palos Verdes Peninsula and Mrs. V. Wayne Rogers, South Pasadena, Calif., part interest to each

Continuation-in-part of Ser. No. 39,375, May 21, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,583
Int. Cl. B65b *9/08*
U.S. Cl. 53—14 **24 Claims**



This disclosure relates to a method of forming containers and packages wherein either an unfilled container or a partially filled package may be formed. The method basically relates to the forming of a container or package having two faces from web material wherein the web material is formed into a tubular container with the two walls closed transversely at the bottom end and open at the top end, and a wide seam joins together double overlapping thicknesses of the web material to form a filling passage between the double thicknesses with the seam extending across the full width of the overlapping thicknesses and through which filling passage a substance or an additional substance can be added to the interior of the package, the entire filling passage being positioned within the wall of one package face which under pressure from contents within the package curves outwardly to hold the passage walls in mutual contact preventing the exit of the contents of the package through the passage and in the case of a partially formed package, introducing a first substance into the tubular container through the remaining open upper end of the tube walls, and thereafter placing a closing seal across the top end of the container.

3,785,112

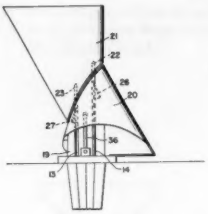
METHOD AND APPARATUS FOR FORMING SHAPED PACKAGE

William C. Leasure, Houston, and Luis Garcia, Bellaire, both of Tex., assignors to Mira-Pak, Inc., Houston, Tex.

Filed Sept. 21, 1971, Ser. No. 182,415
Int. Cl. B65b *9/08, 43/10*
U.S. Cl. 53—28 **5 Claims**

The invention relates to a meothod and apparatus for forming packages on form, fill and seal package machinery wherein strip packaging film is shaped into a tube by passing over a former. The former is provided with means for shaping the package with corners so that a package with any desired configuration with side faces is provided. Means may also be in-

corporated in the former for creasing the tubular shaped packaging film to provide gussets in the side walls. Additional



sealing means may be provided beneath the former to reenforce the corners formed by the former.

3,785,113

PACKAGING MACHINE

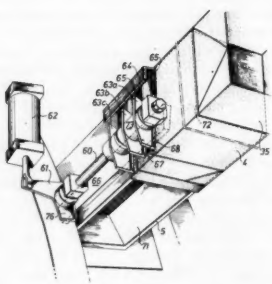
Kjell Halvard Martensson; Bjorn H son Linde, both of Malmo; Jan Fredrik Palsson, and Sven Torsten Jerre, both of Lund, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Feb. 22, 1972, Ser. No. 227,812

Claims priority, application Sweden, Mar. 25, 1971, 3864/71

Int. Cl. B65b *3/02*

U.S. Cl. 53—186 **8 Claims**



A packaging machine by which package blanks having suitable crease lines are fed onto and erected on mandrels on a rotating wheel and the crease lines for the bottom of the package are broken and then heated, folded and sealed at successive stations to form a package. When packages having different lengths for packages of different volumetric capacity are employed on one machine it is necessary to accurately position each erected blank on the mandrel so that the crease lines for the bottom of the package are at the outer end of the mandrel whereby breaking and folding thereof will take place properly. The present machine is provided with stop means for automatically cooperating with the walls of the mandrel to form an abutment for the erected blank so that it can be properly located on the mandrel for the successive operations to form the bottom of the package.

3,785,114

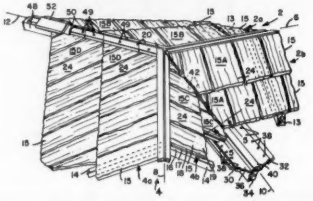
BUILDING PANEL ENCLOSURES FOR VALLEY AND HIP STRUCTURES

John K. Kough, Morgan Hill; Otis M. Martin, San Jose, and Silas N. Miller, Saratoga, all of Calif., assignors to Ditz-Crane, San Francisco, Calif.

Division of Ser. No. 856,235, Aug. 7, 1969, Pat. No. 3,696,570. This application Dec. 20, 1971, Ser. No. 210,038

Int. Cl. E04b *7/06*

U.S. Cl. 52—748 **2 Claims**



Prefabricated enclosure tip panels and a method of manufacturing the tip panels for enclosing valley and/or hip areas. The tip panel at one longitudinal end is beveled at an angle *a* which angle is dependent upon the relative angle between the two sections at the valley and/or hip joint. The other longitudinal end is adapted for interengagement with a standard panel. A method of manufacturing the tips includes segmenting a standard panel at the angle *a* to form a first valley tip panel and a first hip tip panel. A second standard panel is then segmented at an angle $180°-a$) to form a second valley tip panel complementary to the first valley tip panel and a second hip tip panel complementary to the first hip tip panel. The tip panel segments are adapted to be joined in combination along the valley line and/or hip line to form a complete valley and/or hip construction and to engage standard panels. A valley flashing may be positioned along the valley center line and extend laterally relative to the center line beneath the valley tip panels to provide a hidden run-off path for water on the roof.

3,785,115

APPARATUS FOR PRODUCING A PACKAGED ASSORTMENT OF DIFFERENT SWEETS

Klaus Oberwelland, Steinhagen, and Siegfried Wiegratz, Halle, Westfalen, both of Germany, assignors to Firma August Storck GmbH, Halle, Westfalen, Germany

Filed Mar. 25, 1971, Ser. No. 127,935

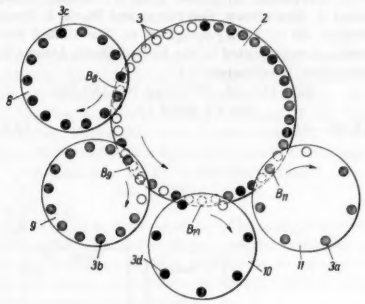
Claims priority, application Germany, Nov. 24, 1970, P 20 57 724.6

Int. Cl. B65b *35/08, 35/26;* **B65g** *49/00*

U.S. Cl. 53—154 **6 Claims**

An apparatus for the production of a packaged assortment of sweets, in particular of different sweets, which comprises a feeding ram, and a wrapping mechanism including the feeding ram. An intermittently movable main feeder is provided which contains consecutively disposed pockets for the reception of the sweets and for delivering the same to the feeding ram of the wrapping mechanism. A plurality of supplementary, intermittently movable feeders are arranged which have pockets adapted to be fed from storage means, in which for achieving a predetermined sequence of the different kinds of sweet in the packaged assortment the main feeder is positioned adjacent to the supplementary feeders. The number and relative spacing of the pockets of both the main and supplementary feeders

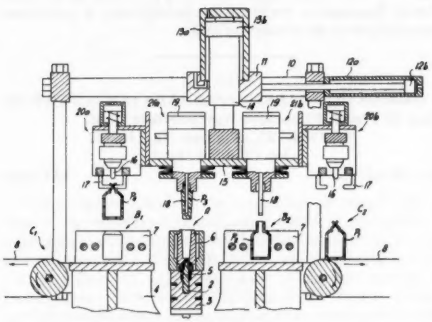
and their frequency of intermittent movement are so synchronized, that each supplementary feeder fills only a predetermined associated pocket or pockets in the main feeder.



3,785,116
DEVICE FOR THE PRODUCTION OF FILLED AND CLOSED PLASTIC CONTAINERS

Paul Munz, Netstal, and Hans Byland, Mitlodi, both of Switzerland, assignors to Maschinenfabrik und Giesserei Netstal AG, Nafels, Switzerland

Filed Aug. 31, 1971, Ser. No. 176,589
Int. Cl. B65b *1/02*
U.S. Cl. 53—194 **6 Claims**

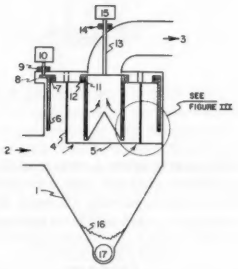


In a method of producing, filling and closing plastic containers, the steps of producing a container preform, blowing up the preform and filling the resultant container, closing the filled container and removing the filled container are performed simultaneously at different locations or stations, whereby several containers are simultaneously subjected to respective different steps. Each container is produced, filled, closed and removed in two successive steps, the removal being effected at opposite ends of a row of stations, with the production of a preform being effected, in both steps, in the same station of the row by injection molding, while the blowing up and filling of a container, the closing of a filled container and the removal of the filled container are effected in successive steps at two different stations in the row and adjoining the injection molding station. The apparatus includes at least one row of five stations arranged at equal distances from each other, with first and fifth being removal stations, the second and the fourth being blowing up, filling and closing stations, and the third or central station being an injection molding station. A runner reciprocable longitudinally of the row in steps whose length is equal to the distance between adjacent stations is arranged above stationary lower tools provided in each of the five stations. This runner carries four upper tools on a support which is vertically reciprocable into and out of operative relation with the lower tools. The runner is reciprocated through a stroke equal to the distance between two adjacent stations. In each of the two positions of the runner, the four upper tools cooperate with a respective end station and the three stations immediately succeeding the end station.

3,785,117
ROTATING CONCENTRIC HOMOGENEOUS TURBULENCE ELECTROSTATIC PRECIPITATION GAS CLEANER METHOD

William Cumming Leith, 7501 Latona N.E., Seattle, Wash.

Filed Feb. 7, 1972, Ser. No. 223,835
Int. Cl. B03c *3/74*
U.S. Cl. 55—2 **2 Claims**



This invention relates to the application of couette motion caused by centrifugal forces in a rotating concentric "homogeneous turbulence" electrostatic precipitation gas cleaner, to provide uniform separation of gaseous, liquid, and solid particulates in a carrier fluid, by adjustable levels of imposed discrete "homogeneous turbulence" established by Taylor circular couette motion with a multiple array of double rows of secondary flow cellular vortices in the annulus between the inner perforated cylinder and the outer perforated cylinder, with the cylinders rotating at about the same velocity in opposite directions. When the outer cylinder rotates about three times faster and in the opposite direction to the inner cylinder, with the electrical power turned off, an adjustable level of imposed discrete spiral band of turbulence in a travelling wave, will move up or down in the annulus, and will clean the collected material from the surfaces of the discharge and collecting electrodes.

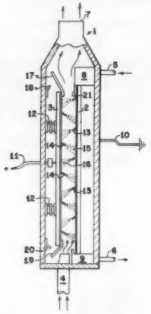
3,785,118
APPARATUS AND METHOD FOR ELECTRICAL PRECIPITATION

John A. Robertson, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 22, 1972, Ser. No. 236,851
Int. Cl. B03c *3/16*
U.S. Cl. 55—5 **10 Claims**

A liquid spraying electrical precipitator comprising a pair of electrically conductive walls and a plurality of spouts on each wall. A cleaning liquid such as water is applied to one of the walls, as by drippers at the top thereof, and flows downwardly to the spouts thereon. The liquid is caused to transit the gap between the walls by application of a strong electrical field. Preferably the wall of initial application is grounded, and the other wall is connected to a source of high positive potential. The electrical field so created causes negatively charged drops to be sprayed from the spouts on the first wall, and to follow a somewhat downwardly directed trajectory until they impinge

upon the second wall. Water impinging on the second wall runs downwardly to spouts thereon, and is resprayed as positively charged drops across the gap to the first wall. This process is continually repeated until the water finally exits at



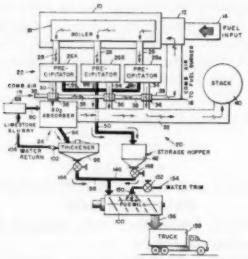
the bottom of the precipitator. A stream of dirty gas flows upwardly through the precipitator, and is cleansed by the action of the positively and negatively charged drops continually spraying and respraying back and forth between the walls.

3,785,119

METHOD AND APPARATUS FOR REMOVING PARTICULATES AND OXIDES OF SULPHUR FROM GAS

Robert W. McIlvaine, Northbrook, Ill., assignor to Environeering, Inc., Skokie, Ill.

Filed Oct. 4, 1972, Ser. No. 295,006
Int. Cl. B03c *3/04*
U.S. Cl. 55—7 **25 Claims**



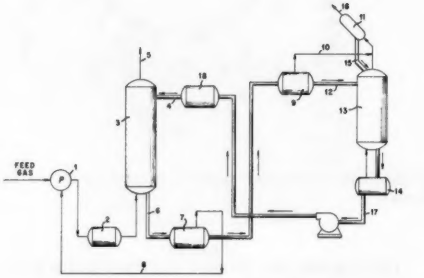
The method of removing dry particulates and oxides of sulphur from gas comprises passing said gas through a dry treatment stage for separating dry particulates therefrom, passing a portion of said gas treated in said dry treatment stage through a wet absorber stage for separating the oxides of sulphur therefrom, and intermixing said dry particulates separated in said dry treatment stage with the wet, sulphur containing materials separated from the gas in said wet absorber stage producing a semi-dry material suitable for use in land fills and the like.

3,785,120

RECOVERY OF PURIFIED HELIUM OR HYDROGEN FROM GAS MIXTURES

James R. Merriman, Kingston; John H. Pashley, Oakridge; Michael J. Stephenson, Oakridge, and David I. Dunthorn, Oakridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 15, 1971, Ser. No. 189,546
Int. Cl. B01d *53/14*
U.S. Cl. 55—44 **10 Claims**



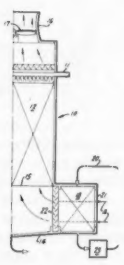
A process for the removal of a component selected from helium and hydrogen from gaseous mixtures also containing contaminants. The gaseous mixture is contacted with a liquid fluorocarbon in an absorption zone maintained at superatmospheric pressure to preferentially absorb the contaminants in the fluorocarbon. Unabsorbed gas enriched in hydrogen or helium is withdrawn from the absorption zone as product. Liquid flurocarbon enriched in contaminants is withdrawn separately from the absorption zone.

3,785,121

COMBINATION GAS STRIPPER AND COOLING TOWER

Peter M. Phelps, 15 Buckeye Way, Kentfield, Calif.

Filed Mar. 27, 1972, Ser. No. 238,307
Int. Cl. B01d *19/00*
U.S. Cl. 55—53 **13 Claims**



A method and apparatus for simultaneously stripping a liquid stream contaminated with a dissolved gas impurity in a stripping section and cooling a fluid (liquid or gas) in a fluid cooling section. The stripping efficiency is increased by supplying an air stream for stripping which has been warmed by heat transfer with the cooled fluid in the fluid cooling section. In one embodiment, one or more fluid cooling sections of a crossflow type are disposed below and to the sides of an upright stripping section so that a fan can draw air sequentially through both sections. In another embodiment, fluid cooling sections of crossflow type are disposed at the sides of the stripping section at the same elevation. For economy, the

cooled fluid exiting from the liquid cooling section may be directed past a heat generating source for cooling the same and thereafter recycling to the fluid cooling zone.

3,785,122

PROCESS FOR PREPARING 4,5A ZEOLITE AND METHOD FOR SEPARATING MIXTURES USING SAME

Yoshifumi Yatsurugi, 6-507 7-ban, 2-chome, Tsujido, Nishikai-gun, Fujisawa; Tatsuo Kuratomi, 2-18, 4-chome, Hamatake, Chigasaki, and Tetsuo Takaishi, 1461-251, Nagae, Hayamacho, Miuragun, Kanagawa, all of Japan

Filed Jan. 27, 1972, Ser. No. 221,431

Int. Cl. B01d *53/04*

U.S. Cl. 55—75 **4 Claims**

This invention is concerned to a process of preparing a novel kind of A-type zeolite having specific molecular sieving actions and a method of using said zeolite to separate a mixture of substances into substances having a different adsorption effective cross-sectional area.

3,785,123

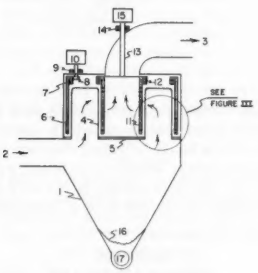
ROTATING CONCENTRIC "HOMOGENEOUS TURBULENCE" FABRIC BAG GAS CLEANER METHOD

William Cumming Leith, 7501 Latona N.E., Seattle, Wash.

Filed Feb. 7, 1972, Ser. No. 223,851

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **3 Claims**



This invention relates to the application of couette motion caused by centrifugal forces in a rotating concentric "-homogeneous turbulence" fabric bag gas cleaner, to provide uniform separation of gaseous, liquid, and solid particulates in a carrier fluid, by adjustable levels of imposed discrete "-homogeneous turbulence" established by Taylor circular couette motion with a multiple array of secondary flow cellular vortices in the annulus between the inner perforated cylinder and the outer perforated cylinder, with both cylinders rotating in the same direction. When the outer cylinder rotates in the opposite direction to the inner cylinder, an adjustable level of imposed discrete spiral band of turbulence in a travelling wave, will ripple the fabric bags, will move either up or down in the annulus, and will clean the collected material from the inner surface of the fabric bags.

3,785,124

POLLUTION-FREE KITCHEN VENTILATOR

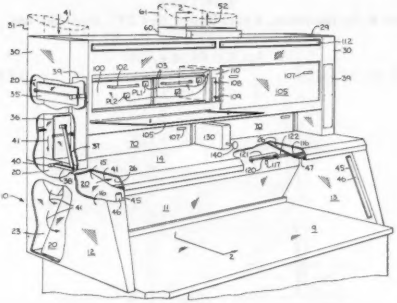
Asa K. Gaylord, Portland, Oreg., assignor to Gaylord Industries, Lake Oswego, Oreg.

Filed Aug. 2, 1971, Ser. No. 168,019

Int. Cl. B01d *50/00*

U.S. Cl. 55—118 **15 Claims**

A ventilating hood has an ascending exhaust duct equipped with a series of air cleaning and purifying instrumentalities for removing grease, smoke and fumes generated by cooking equipment. Air rising through the duct passes successively through a grease extractor, an electrostatic precipitator, an activated charcoal filter and a deodorizing chemical spray. The grease extractor and precipitator are provided with hot water and detergent washing sprays. The hood has hollow walls containing air supply conduits for fresh air outlets which discharge streams of fresh air for sweeping into the exhaust



duct smokey and grease-laden air from the cooking equipment. A control system provides an automatic wash and dry cycle for the grease extractor and precipitator and includes thermostatic control means for closing fire dampers and turning on the water sprays in case of fire in the ventilator.

3,785,125

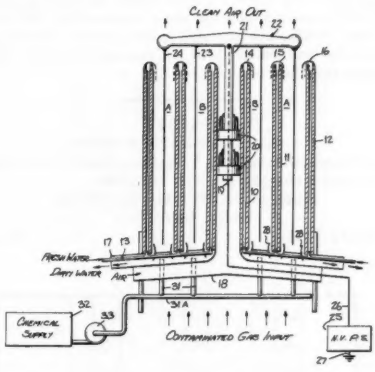
MULTI-CONCENTRIC WET ELECTROSTATIC PRECIPITATOR

Alexander P. DeSeversky, Asharoken Beach, Northport, N.Y.

Continuation-in-part of Ser. No. 53,255, Aug. 31, 1960, Pat. No. 3,716,966. This application Apr. 24, 1968, Ser. No. 723,810

Int. Cl. B03c *3/78*

U.S. Cl. 55—119 **1 Claim**



A Multi-concentric wet electrostatic precipitator of large operating capacity, wherein concentric annular gas passages having the same radial dimensions are defined by a series of vertically-disposed, concentrically-arranged tubes of progressively increasing diameter, inner and outer surfaces of adjacent tubes which form the walls of the passages having downwardly-flowing, uniform liquid films produced thereon. A discharge-electrode structure is disposed in each annular passage, a high voltage being applied between the electrode structures in the several passages and their associated liquid films which act as collectors, thereby causing contaminants in a gaseous stream conveyed upwardly through the passages to

be ionized and to migrate toward the films to be carried downwardly thereby for disposal, gas emerging from the upper end of the passage being free of contaminants.

3,785,126
POLLUTION CONTROL APPARATUS FOR SMOKE EMITTER
John B. Smitherman, Rural Route, Box 297, Danville, Ind.
Filed Nov. 5, 1970, Ser. No. 87,160
Int. Cl. B01d *47/00*
U.S. Cl. 55—228 **1 Claim**

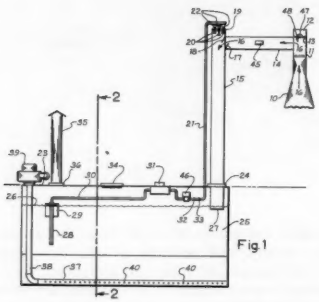
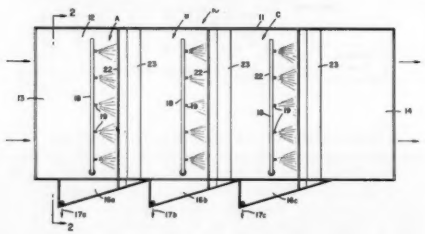


Fig.1

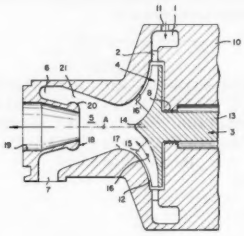
An apparatus for controlling the pollution in a smoke emitter. The apparatus is connected to the emitter by ducts which route the smoke past a smoke detector and through a water spray eventually emerging beneath water in a water-holding basin. A filter and pump arrangement circulate the water in the basin to water nozzles mounted to one of the ducts. The water spray emitted by the nozzles is directed through a duct to the basin. The water flow to the nozzles is controlled by a solenoid valve operably connected to the smoke detector. A sediment removal pipe-pump arrangement is provided in the basin. Pressure within the basin is released via a vent mounted atop the basin and opening into the atmosphere. Baffles are provided in the ducts for directing the water spray and smoke flow. An emergency escape duct is mounted atop the emitter.

3,785,127
SCRUBBING APPARATUS
Ernest Mare, Johannesburg, Transvaal, South Africa, assignor to J. Ronald Hershberger, Palo Alto, Calif.
Filed Feb. 22, 1971, Ser. No. 117,348
Int. Cl. B01d *47/06*
U.S. Cl. 55—233 **8 Claims**



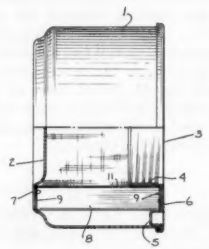
An apparatus for scrubbing a stream of air or other gas with a scrubbing liquid (e.g., water). The scrubbing is carried out in successive stages simultaneously with classification of the removed material, the removed material being withdrawn as separate fractions. Each stage is provided with means for scrubbing the gas with liquid droplets and by impingement with surfaces wet with liquid, and also with means for eliminating droplets whereby they are not delivered to the next scrubbing stage.

3,785,128
EXPANSION TURBINE SEPARATOR
Hubert Redemann, Weiss, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed July 6, 1971, Ser. No. 159,673
Claims priority, application Germany, July 15, 1970, P 20 35 138.6
Int. Cl. B01d *45/14*
U.S. Cl. 55—405 **6 Claims**



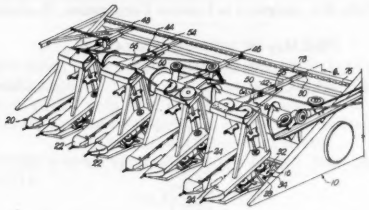
An expansion turbine, especially for the work expansion of low-temperature liquefiable gases, which comprises around the axis of the rotor a liquid-collecting chamber, communicating with the gas-outflow chamber, provided with an outlet through which the liquefied gas can be led after it is centrifugally collected along the annular walls of this chamber.

3,785,129
SPIN-ON AIR FILTER
Charles J. Szmutko, Edison, N.J., assignor to Purolator, Inc., Rahway, N.J.
Filed Nov. 1, 1971, Ser. No. 194,352
Int. Cl. B01d *27/08*
U.S. Cl. 55—419 **2 Claims**



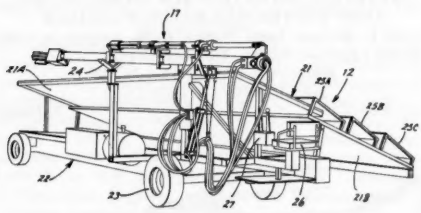
A spin-on air filter has a casing and end cap forming opposing seats, and a pleated paper annular filter element has its ends closed by these seats to provide for radial air flow through the element.

3,785,130
HEADER MOUNTING FOR ROW UNITS
Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.
Filed Dec. 15, 1972, Ser. No. 315,560
Int. Cl. A01d 45/02
U.S. Cl. 56—98 10 Claims



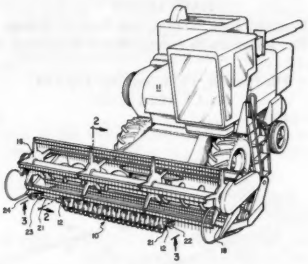
A series of spring-loaded row units are individually mounted on the header of a harvester by a hinge assembly on the cutter bar and by upper supports extending between the units and a rear frame piece of the header. The hinges have interlocking hooks which rock relatively as the row units swing up and down over uneven terrain, the hooks being of such nature as to permit relative sliding movement as the distances between the units are varied. The supports are releasably hooked at the frame piece so that the entire distance adjustment as well as unit removal and remounting may take place quickly and easily by a single operator with but a single tool to release a pair of fasteners on each unit. Adjustment of the tilt of the units is equally as rapid and easy because of the use of a hook-slot arrangement in each of the top-rear supports.

3,785,131
FRUIT HARVESTING APPARATUS
David G. Friday, and Philip L. Friday, both of R.R. No. 2, Hartford Township, Van Buren County, Mich.
Filed Sept. 15, 1972, Ser. No. 289,576
Int. Cl. A01g 19/06
U.S. Cl. 56—328 TS 14 Claims



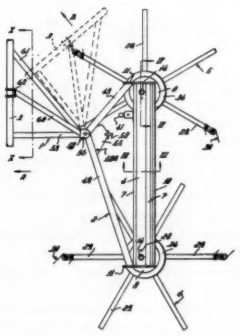
A fruit harvester having a limb shaking apparatus mounted in association with a catching structure adapted to be disposed below a tree for catching the dislodged fruit. The shaking apparatus includes a telescopic boom assembly which can be linearly extended into the tree, and which can also be horizontally and vertically swingably displaced to enable jaws mounted adjacent the end of the boom to be positioned in gripping engagement with a selected limb. A vibrator mechanism is mounted adjacent the end of the boom and is connected to the jaws for causing vibration thereof in a direction substantially perpendicular to the longitudinally extending direction of the boom. The vibrator mechanism and the jaws are mounted on a head assembly which can be angularly displaced about the longitudinal axis of the boom.

3,785,132
GRAIN PICK UP
Duane L. Wilson, 240 N. 1st East, Richfield, Utah
Filed June 1, 1972, Ser. No. 258,764
Int. Cl. A01d 89/00
U.S. Cl. 56—364 2 Claims



A pick up unit mounted to and turned by a grain combine in advance of the feed reel of the combine to raise and position the grain. The pick up unit consists of a cylinder having a number of flexible fingers projecting from the outer wall thereof. The cylinder is rotated in the path of the moving combine so as to comb the flexible fingers upwardly through the stalks of a crop untangling and elevating the stalks prior to their contact with the bats of the combine feed reel. The feed reel bats in turn directs the crop stalks over a cutting blade secured to the combine.

3,785,133
HAY MAKING MACHINES
Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland
Filed Mar. 6, 1972, Ser. No. 231,899
Claims priority, application Netherlands, Mar. 5, 1971, 7102932
Int. Cl. A01d 77/06
U.S. Cl. 56—370 12 Claims



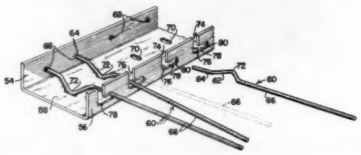
A hay making machine includes at least two rotary raking members that are driven by a horizontal shaft housed in a sheet metal beam. Coupling elements are secured to opposite ends of the sheet metal beam and are pivotally joined to a hinge. The hinge is secured to tubular beams or a draw bar which can be coupled to the rear of a prime mover and by moving the tubular beams or draw bar about the hinge, different transport and working widths are arranged. The shaft is connected via pinions to rotate sleeves with horizontal spokes attached and tines are connected to the spokes. A centrally

located ground wheel is adjustably mounted beneath each sleeve to support its respective raking member. All of the moving parts are easily accessible and replaced and the entire machine is economically constructed.

3,785,134
MULTIPLE USE FINGER ASSEMBLY FOR A COMBINE HARVESTER

Robert L. Francis, East Moline, and Paul L. Rouse, Moline, both of Ill., assignors to International Harvester Compay, Chicago, Ill.

Filed Feb. 8, 1973, Ser. No. 330,768
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **5 Claims**

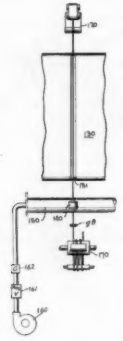


A finger assembly having various uses in connection with a combine harvester such as, for example, to provide grain pan fingers, beater grate fingers, or pick-up reel fingers. A channel member constitutes a base support for a multiplicity of fingers which are capable of quick and easy manual removal and installation in various relief areas which are provided in the channel flanges and web.

3,785,135
PRODUCING TORQUE CONTROLLED VOLUMINOUS SET YARNS

Warren A. Seem, Nassau, Bahamas; Nicholas J. Stoddard, Berwyn, and Robert W. Stoddard, Chester Springs, both of Pa., assignors to Leesona Corporation, Warwick, R.I.

Filed Apr. 5, 1971, Ser. No. 131,367
Int. Cl. D02g *1/02, 1/16*
U.S. Cl. 57—34 HS **35 Claims**

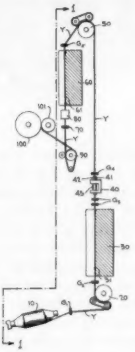


Disclosed is a method and apparatus for producing a torque-controlled voluminous set yarn. Novel false twisting means hereinafter referred to as a "whirler" is employed to impart a relatively low number of twists per inch to a torque stretch yarn by blowing air circumferentially around the yarn at a pressure and flow coordinated with the yarn tension and the amount of heat imparted to the yarn. The covering power of the yarn and the bulk or voluminosity of the yarn thus produced is enhanced and residual torque in the yarn is controlled uniformly throughout the length of the yarn which is treated. Also disclosed is a set yarn with high bulk and controlled torque characteristics, novel yarn packages, fabric produced therefrom and garments made from said fabric.

3,785,136
APPARATUS AND PROCESS FOR PRODUCING TORQUE CONTROLLED VOLUMINOUS SET YARN AND YARN AND FABRIC PRODUCED THEREBY

Frederick C. Tecce, Lafayette, Pa., and Chester J. Dudzik, Warwick, R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed May 10, 1971, Ser. No. 141,622
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **11 Claims**

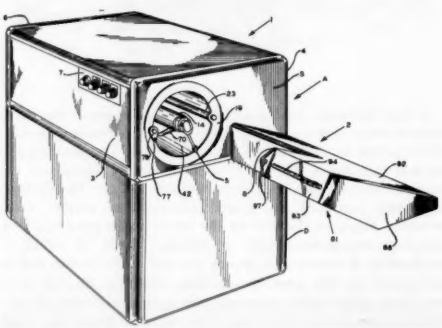


Disclosed is a method and apparatus for producing a torque-controlled voluminous set yarn. False twisting means are employed to impart a relatively low number of twists per inch to a torque stretch yarn passed under low tension in the region of a yarn heater. The covering power of the yarn, i.e., the bulk or voluminosity of the yarn, thus produced is enhanced and residual torque in the yarn is controlled. Also disclosed is a set yarn with high bulk and reduced torque characteristics and a fabric produced therefrom.

3,785,137
APPARATUS AND METHOD FOR PRODUCING NO-TWIST CENTER-PULL ROVING PACKAGES

Harald E. Karlson, Santa Monica, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Filed Oct. 6, 1970, Ser. No. 78,723
Int. Cl. D01h *1/04*; B65h *54/02*
U.S. Cl. 57—71 **27 Claims**



An apparatus and a method for producing a roving package by pretwisting a roving band during winding of the package to

produce a one-twist per revolution band layer configuration. A roving band feeding eye is reciprocated with respect to and simultaneously orbited about a mandrel for winding filament containing roving strands thereupon. The winding is accomplished over the end of the mandrel so that a twist is incorporated in each turn of the roving strand for every revolution of the feeding eye. A device is also provided for shifting the winding eye radially outwardly as the diameter of the roving package increases during winding.

3,785,138

SPINNING UNIT FOR OPEN END SPINNING MACHINE

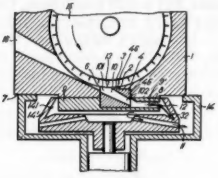
Jaroslav Rajnoha, Tyniste Nad Orlici, and Ladislav Bures, Usti Nad Orlici, both of Czechoslovakia, assignors to Elitex, Zavody Textilniko Strojirenstvi, Liberec, Czechoslovakia

Filed Mar. 9, 1972, Ser. No. 233,095

Claims priority, application Czechoslovakia, Mar. 26, 1971, 71/2211

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **12 Claims**



A spinning unit for use in textile machines, particularly open end spinning machines, comprises a carding roller and a spinning chamber. A supply channel is provided for fibers travelling from the carding roller to the spinning chamber. A yarn withdrawal channel is provided through which yarn is withdrawn from the spinning chamber. At least one detachably mounted expandable wear portion is provided, defining at least part of one of the channels.

3,785,139

WIRE-ROPE WINDING MACHINE AND METHOD OF ITS OPERATION

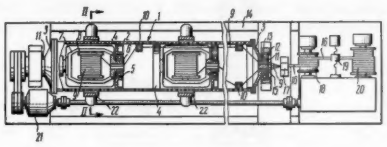
Viktor Fillmonovich Groza, ulitsa Darvina, 7, kv. 12; Nikolai Ivanovich Drozdov, ulitsa Lazareva 1; Jury Nikolaevich Sharapov, 521 mikroraion 73, kv. 16; Alexandr Iosipovich Garbovitsky-Gordon, ulitsa Darvina 19, kv. 21, all of Kharkov; Khristofor Sergeevich Shakhpazov, prospekt Mira 188, korpus 4, kv. 30, Moscow; Nikolai Grigorievich Filatov, gostinitsa Rossia, Orel; Ivan Timofeevich Skripnik, ulitsa Tikhomirova 9/3, kv. 190, Moscow; Alexei Trofimovich Semkin, ulitsa Gastello 26, Khartsyzsk Donetskoi oblasti; Vladimir Ivanovich Vasiliev, ulitsa Vokzalnaya 68, kv. 13, Khartsyzsk Donetskoi oblasti; Valentin Dmitrievich Judin, ulitsa Vokzalnaya 72a, kv. 50, Khartsyzsk Donetskoi oblasti; Evgeny Jurievich Belenky, pereulok Patarzhikskogo 7, kv. 6, Khartsyzsk Donetskoi oblasti; Anatoly Evgenievich Grigorenko, ulitsa Mira 9, Khartsyzsk Donetskoi oblasti, and Gennady Fedorovich Baryshnikov, ulitsa Suvorova 126/4, kv. 44, Magnitogorsk Chelyabinskoi oblasti, all of U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,320

Int. Cl. D07b *3/12, 7/02*

U.S. Cl. 57—58.34 **2 Claims**

In the swinging portion of the wire-rope winding machine the holder with the reel is so positioned inside the rotor that their common centre of gravity lies on the rotor axis. The holder is restrained from rotation when the rotor is in motion by means of an electromagnet in whose magnetic field the holder is located. Deviation of the holder from the normal position is signalized by transducers disposed in the magnetic field of each electromagnet.



The design of the twisting portion permits the axis of the machine rotor to be located in the vertical or inclined position.

3,785,140

DEVICE FOR WINDING THREADS, PARTICULARLY TEXTILE THREADS

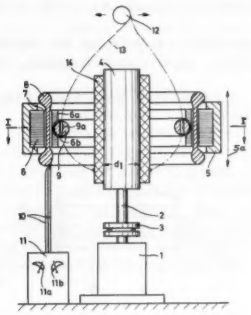
Artur Muller, Karlsruhe, Germany, assignor to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed Dec. 14, 1970, Ser. No. 97,789

Claims priority, application Germany, Dec. 23, 1969, P 19 64 478.1

Int. Cl. D01h *7/58, 1/24*

U.S. Cl. 57—100 **12 Claims**



A device for winding textile threads with constant tension on a vertically disposed winding body with a thread guide which moves in spaced relation from the winding body concentrically around the same in a horizontal circular path. The thread guide comprises a pierced magnetizable member or a pierced member of magnetic material and moves in a circular path formed in a stator ring carrying a stator winding supplied with electrical energy by an adjustable frequency changer which produces in the stator ring a rotary magnetic field acting upon the thread guide which upon an axially reciprocable movement of the stator ring moves the thread guide in addition to its rotary movement also back and forth in axial direction of the winding body so as to cause the thread to be wound in layers on said winding body.

3,785,141

MECHANISM FOR A TIMEPIECE HAVING A PLURALITY OF TIME DISPLAY

Toshimasa Ikegami, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 10, 1973, Ser. No. 322,493

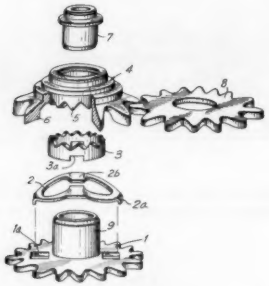
Claims priority, application Japan, Jan. 13, 1972, 47/6986

Int. Cl. G04b *19/22, 27/00*

U.S. Cl. 58—42.5 **10 Claims**

A snap mechanism for a timepiece having a plurality of time displays in which either a first hour wheel or a second hour

wheel is provided with saw teeth, and between the first and second hour wheels there are interposed a sliding member having saw teeth which are engaged with the saw teeth on the



particular hour wheel and a spring pressing the sliding member so that the saw teeth are in engagement. The first and second hour wheels, sliding member and spring are assembled as a self-contained unit.

3,785,142

WATCHCASE COMPRISING AT LEAST A TWO-PIECE CASING ASSEMBLY

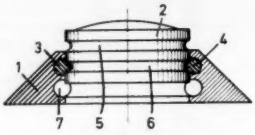
Rene Soguel, Rue de la Chapelle 10, Les Hauts-Geneveys, Switzerland

Filed Mar. 14, 1973, Ser. No. 341,055

Claims priority, application Switzerland, Mar. 16, 1972, 3880/72

Int. Cl. G04b *37/08*; **B65d** *53/00*; **F16j** *9/00*

U.S. Cl. 58—90 R **23 Claims**



A watchcase comprising generally at least a two-piece casing assembly is described. The assembly may comprise external and internal casing members. These two members are assembled with a ring of elastic material retained for the most part therebetween. Aligned grooves are formed in each of the members, and that portion of the ring projecting from the groove in the inner member penetrates a groove in the outer member. Watchcases, particularly when they are shaped and/or fluid-tight, are relatively complicated article. Furthermore, the assembly of the different component parts is relatively intricate and expensive especially to obtain a good quality watchcase presenting good fluid-tightness characteristics.

3,785,143

TRANSPARENT INSTRUMENT COVER HAVING ANTI-REFLECTION COATING ON SELECTED PORTIONS THEREOF

Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

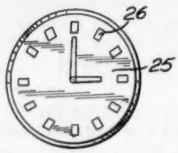
Filed Dec. 16, 1971, Ser. No. 208,867

Claims priority, application Japan, Dec. 21, 1970, 45/128083

Int. Cl. G04b *39/00*; **G02b** *5/28*

U.S. Cl. 58—91 **2 Claims**

Visibility of indicia on an instrument face and particularly on a watch face is increased by the use of an anti-reflection coating on those portions of the transparent cover through which the indicia are normally viewed. The absence of an anti-



reflection coating on the remaining portions of the transparent instrument cover results in reflection resembling that from a transparent cover , portions of which are cut at an angle.

3,785,144

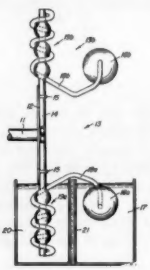
HEAT ENGINE

"EJ" L. Fairbanks, 511 S. 850 East, Orem, Utah

Filed Nov. 2, 1972, Ser. No. 303,246

Int. Cl. F03g *7/06*

U.S. Cl. 60—531 **7 Claims**

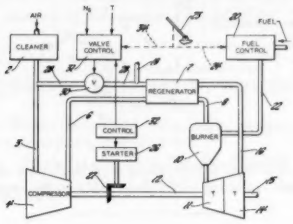


A heat engine adapted to perform work utilizing the temperature differential between hot and cold heat reservoirs as a source of energy, includes a horizontally disposed, rotatable shaft attached to one end to the center of a disc which is adapted to rotate about the longitudinal axis of the shaft. A plurality of heat exchanger sets are disposed in mutually spaced-apart relationship around the circumference of the disc. Each heat exchanger set comprises two pairs of heat exchangers, with each pair communicatingly connected with the other pair, and respectively disposed at diametrically opposing edges of the disc. Each of the pairs of heat exchangers includes two enclosed containers acting as heat exchangers and communicatingly connected with each other and adapted to be immersed simultaneously in respective hot and cold heat reservoirs disposed preferably at the bottom edge of the disc. Each heat exchange set contains a high vapor pressure liquid. When a particular container is in the hot heat reservoir, the liquid therein is heated and the vapor pressure is increased to drive liquid from the container into the container in the cold reservoir and then across the disc into the other pair of heat exchangers. As the volume of liquid increases in the opposite pair of heat exchangers, gravity forces the disc to rotate, and energy to perform work is thereby generated. In one embodiment, all containers adapted for immersion in the cold heat reservoir are replaced by a single tube-like container disposed about the circumference of the disc and connected to all heat exchanger containers which are adapted to be immersed in a hot heat reservoir.

3,785,145
GAS TURBINE POWER PLANT

Charles A. Amann, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1971, Ser. No. 197,300
Int. Cl. F02c *7/10, 9/02*
U.S. Cl. 60—39.24 **6 Claims**

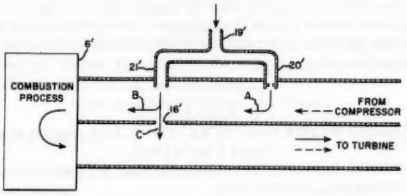


A regenerative fuel-fired gas turbine power plant includes ducting and a valve to direct some of the engine exhaust into the engine inlet where it mixes with air flowing into the compressor of the engine. This recirculation of exhaust gases is controlled so that it takes place substantially only during the warm-up period of the engine after it is started and brought up to idling speed, and until the regenerator has been brought to something like normal operating temperature. Recirculation volume is controlled by a temperature in the engine.

3,785,146
SELF COMPENSATING FLOW DIVIDER FOR A GAS TURBINE STEAM INJECTION SYSTEM

Gordon B. Bailey, Taylors, S.C., and Carl F. Wilhelm, Jr., Scotia, N.Y., assignors to General Electric Company, Schnectady, N.Y.

Filed May 1, 1972, Ser. No. 249,393
Int. Cl. F02c *7/14*
U.S. Cl. 60—39.53 **4 Claims**



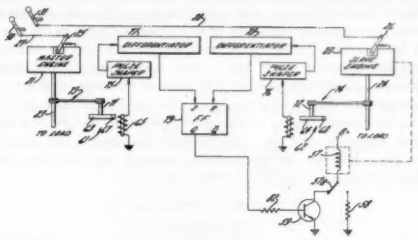
In a gas turbine, steam is injected into the combustion chamber both upstream and downstream of the combustion reaction zone. A self-compensating feeding device divides the steam flows between the upstream and downstream injection points and supplies a constant percentage of steam to air to the combustion reaction zone regardless of the total rate of steam flow into the gas turbine cycle.

3,785,147
DIGITAL SYNCHRONIZING AND PHASING SYSTEM

James L. Leeson, Jr., Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed June 14, 1972, Ser. No. 262,792
Int. Cl. F01b *25/06*
U.S. Cl. 60—97 S **19 Claims**

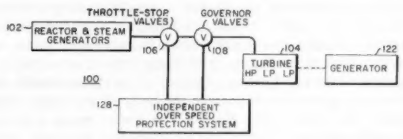
Digital systems for synchronizing prime movers equipped with magnetic ball head speed governors provide smooth and continuous synchronizing control. A plurality of prime movers may be synchronized by operating one as a "master" and the other as "slaves," in which event each "slave" is equipped with a magnetic ball head speed governor and the bias coil of each such governor is supplied with a digital control signal which is modulated in accordance with any difference between the speed of the associated "slave" and that of the "master." Alternatively, a pair of prime movers may be synchronized by equipping each of them with a magnetic ball head speed governor and by supplying the bias coils of those governors with digital signals which are complementarily modulated in accordance with any difference between the speeds of the prime movers. The reference level of the digital control pulses may be adjusted manually or automatically to establish and maintain a desired phase relationship between the synchronized prime movers.



3,785,148
ELECTRONIC SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH INDEPENDENT OVERSPEED PROTECTION ESPECIALLY ADAPTED FOR A NUCLEAR REACTOR POWERED STEAM TURBINE

Michael C. Luongo, Brookhaven, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,230
Int. Cl. F01k *13/02, 17/02*
U.S. Cl. 60—105 **64 Claims**



In a steam turbine an overspeed protection system and method is provided which operates completely independently of the conventional steam valve controller or governor. Existing hydraulically actuated valves such as stop valves, governor valves, interceptor valves, etc., are deactivated by draining hydraulic control fluid from the aforementioned through the action of specially provided dump valves. A pair of dump valves is provided for each of the steam flow valves.

Three turbine speed sensing transducers operating independently provide signals which are translated through three corresponding check circuits into related overspeed check signals. The three resulting check signals relating to overspeed are translated through majority switching logic into two dump valve trip signals. Each set of such trip signals operates one of the pair of dump valves on each steam control valve.

3,785,149
METHOD FOR FILLING A BAG WITH WATER VAPOR AND CARBON DIOXIDE GAS

Hubert G. Timmerman, Manhattan Beach, Calif., assignor to Specialty Products Development Corporation, Hytek Park, Medina, Ohio

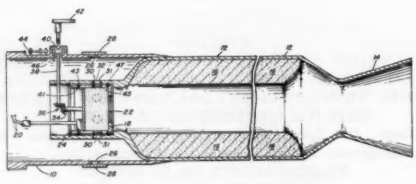
Filed June 8, 1972, Ser. No. 261,041
Int. Cl. C06d *5/00*
U.S. Cl. 60—205 **9 Claims**

A deflagration composition yielding a gas comprising principally carbon dioxide and water vapor comprises a substantially homogeneous mixture of citric acid powder in the range of from about 25 to 37 percent by weight and an oxidizer powder selected from the group consisting of potassium chlorate, potassium perchlorate, sodium chlorate, and sodium perchlorate. This composition may be used adjacent a coolant powder comprising up to about 40 percent by weight of potassium chlorate and an endothermic decomposition coolant having a thermal decomposition product selected from the class consisting of carbon dioxide and water.

3,785,150
INTEGRAL THRUST NEUTRALIZER FOR ROCKET ENGINES

Emanuel E. Katcher, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1973, Ser. No. 322,348
Int. Cl. F02k *9/04*
U.S. Cl. 60—229 **6 Claims**



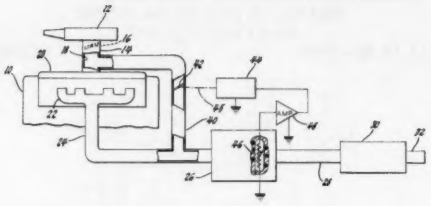
Thrust-neutralizing means for a missile having a rocket motor having igniter means, said neutralizing means compressing a set of blowout ports in the casing of said igniter and blowout discs in said ports, a similarly spaced set of ports in the neck of the combustion chamber of the rocket motor, and a similarly spaced set of ports in the body of the means which couples the motor to the missile. The igniter means is rotatable so that all sets of ports can be aligned in the "safe" position. The ports in the body of the coupling means is forwardly angled so that any gas discharge thru these ports provides backward thrust for the missile.

3,785,151
EXHAUST GAS RECIRCULATION SYSTEM

William H. Holl, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 296,057
Int. Cl. F02m *25/06;* **F02b** *75/10*
U.S. Cl. 60—277 **2 Claims**

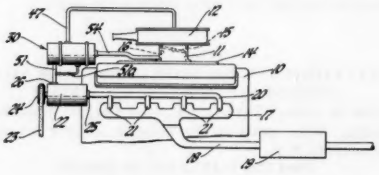
An exhaust gas recirculation system in which engine exhaust gases are recirculated to provide over-temperature protection to a catalytic converter in the exhaust system of the engine, the recirculation of a portion of the exhaust gases beginning at a predetermined converter temperature with the amount of exhaust gases being recirculated increasing with increases in converter temperature until such time as all of the exhaust gases are being recirculated back to the engine.



3,785,152
INLET THROTTLED AIR PUMP FOR EXHAUST EMISSION CONTROL

Donald J. Pozniak, Mt. Clemens, and Robert M. Siewert, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1972, Ser. No. 305,985
Int. Cl. F01n *3/00;* **F02b** *75/10*
U.S. Cl. 60—290 **8 Claims**

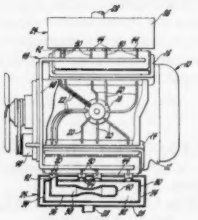


A pressure operated control valve throttles the inlet to the engine driven air pump used to supply injection air for the emission control system of an internal combustion engine of a vehicle, the inlet to the air pump being throttled in relation to engine throttling.

3,785,153
ENGINE WITH EXHAUST REACTOR ARRANGED FOR EARLY IGNITION

Richard C. Schwing, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1972, Ser. No. 300,830
Int. Cl. F02b *75/10;* **F01n** *3/10*
U.S. Cl. 60—303 **3 Claims**



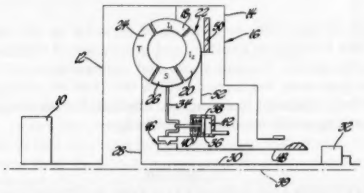
In a preferred embodiment, a V-type internal combustion engine is provided with a pair of exhaust manifold reactors, one for each bank, each manifold reactor has a main reaction chamber connected with all but one of the cylinders of its

respective bank and a smaller ignition chamber inside the main chamber and connected with the remaining cylinder of each bank. During engine start-up, excess fuel is supplied to the cylinders connected with the ignition chambers forming a richer than normal exhaust to which excess secondary reaction air is added. This mixture passes through the ignition chamber where it receives heat from the surrounding exhaust gases in the main chamber and is ignited, causing combustion to propagate into the leaner mixture in the main chamber so that early start-up of the reaction process results.

3,785,154
HYDRODYNAMIC FLUID UNIT WITH ENERGY STORAGE

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,198
Int. Cl. F16h *41/04*
U.S. Cl. 60—347 **4 Claims**

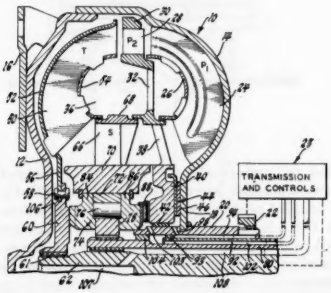


This torque converter has an auxiliary rotor which is drivingly connected to an inertia mass that stores energy during normal converter operation. When increased output torque is desired, the blades of the stator are switched to a high angle position to change the direction of flow into the auxiliary rotor. Under these conditions the inertia mass drives the auxiliary rotor causing it to act as an auxiliary pump to increase flow rate in the converter so that torque on the turbine is increased.

3,785,155
HYDRODYNAMIC UNIT WITH AUXILIARY ROTOR

Ernest W. Upton, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1972, Ser. No. 310,025
Int. Cl. F16h *41/00*
U.S. Cl. 60—347 **6 Claims**

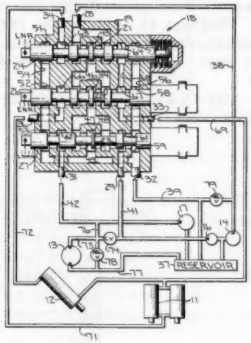


A bladed auxiliary pump, disposed adjacent to the exit of a bladed primary pump of this torque converter, is selectively connectable to the converter input by a clutch actuated by turbine and stator thrust forces. When the clutch is engaged, the blading of the auxiliary rotor changes the fluid flow from the primary pump into the turbine to decrease the torque absorption capacity of the converter. By feeding fluid to the converter through a special feed passage, the turbine and stator thrust forces can be cancelled to effect the disengagement of the clutch to release of auxiliary pump and thereby increase the capacity of the converter.

3,785,156
HYDRAULIC CONTROL FOR SELF-LOADING SCRAPER WITH THREE-SPEED ELEVATOR DRIVE

John A. Junck, Joliet, Ill., and Joseph Kokaly, Buckeye, Ariz., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1971, Ser. No. 212,136
Int. Cl. F16h *39/48*
U.S. Cl. 60—421 **3 Claims**

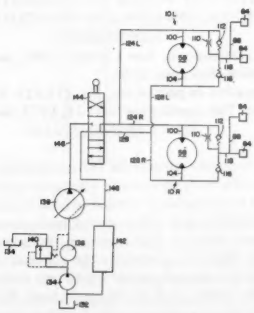


A hydraulic control system for a self-loading scraper elevator drive having a plurality of pumps for combined control of the scraper bowl, ejector, and elevator drives, the flow from the pumps being selectively combinable under the control of an operator to vary the speed of the elevator drive to accommodate different conditions of machine operation. The system permits more efficient utilization of the available engine torque which must be used for propelling the vehicle and driving the scraper bowl, ejector and elevator.

3,785,157
FLOW CONTROL DUMP VALVE

Carl Edwin Kittle; Seaton Moon, both of Cedar Falls, and Keith Louis Spencer, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 24, 1972, Ser. No. 309,365
Int. Cl. F16h *39/02*
U.S. Cl. 60—493 **7 Claims**



The wheel motor of a hydrostatic drive system is coupled to the wheel through a pressure responsive clutch which discon-

nects the motor from the wheel during periods when fluid under pressure is not supplied to the motor. A flow control dump valve is built into the clutch actuator and regulates a specific rate of flow through the actuator from zero to lock-up pressure. The flow control dump valve blocks all flow through the actuator above lock-up pressure. The flow control dump valve provides a controlled bleed for purging of air and sumping of oil which leaks past the control valve below lock-up pressure. The sumping of oil below lock-up pressure ensures complete release of the clutch when fluid pressure is not supplied to the motor.

3,785,158

HYDRAULIC ENGINEERING INSTALLATIONS

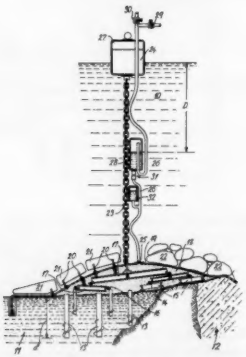
Andrew Noel Schofield, Didsbury, England, assignor to National Research Development Corporation, London, England

Filed Sept. 17, 1971, Ser. No. 181,414

Claims priority, application Great Britain, Sept. 18, 1970, 44,589/70; Sept. 18, 1970, 44,590/70; Sept. 18, 1970, 44,591/70

Int. Cl. E02b *1/00, 5/02;* **E02d** *3/10*

U.S. Cl. 61—1 **10 Claims**



A marine foundation in a pool is provided by placing a liquid impermeable sheet on the bed of the pool and locating a drain below the sheet. Then, by applying suction force to the drain, a pressure differential is set up whereby the sheet is sealed to the bed and the adjacent bed material consolidates to effectively form a solid mass embedded below and sealed to the sheet. This action affords a large capability for lateral shearing stresses. In use, anchorages, dam-form barriers, storage tanks, and other structures can be tied to the sheet.

3,785,159

ATTENUATION OF WATER WAVES AND CONTROL AND UTILIZATION OF WAVE-INDUCED WATER MOVEMENTS

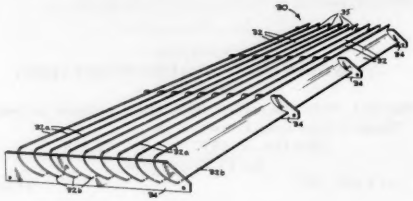
Douglas L. Hammond, San Carlos, Calif., assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 113,521, Feb. 8, 1971, abandoned. This application Nov. 21, 1972, Ser. No. 308,368

Int. Cl. E02b *3/06, 15/04*

U.S. Cl. 61—5 **33 Claims**

Curved vane-like structures for positioning beneath or at the surface of a body of water to attenuate incident waves, and change the wave-induced normal orbital water movements to produce currents and other useful hydrodynamic effects or combinations thereof. The vanes in the structures are configured and oriented to intercept the water at various locations in its orbital movements, guide it into new paths defined by the shape of the vanes, and discharge it from the structure as a current flowing in a preselected direction, such as counter to or in the direction of wave movement, towards the water surface, or towards the bottom or floor of the body of water. These effects are utilized to perform useful work, including diminishing wave height, speed and period, moving subsurface and surface debris and contaminants such as spilled oil to a collecting point or facility, transportation and dispersal of waters polluted by thermal, chemical or other discharges,



transfer of sand, silt, or other solid material on the bottom from one location to another, and generation of electrical or hydraulic power. Various styles and configurations of these vaned structures, manners in which they can be arranged to perform an intended function, and methods for securing them in operating position also are described.

3,785,160

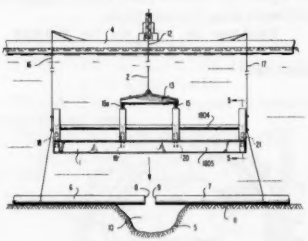
METHOD AND APPARATUS FOR WORKING ON SUBMERGED PIPELINE MEANS

Mark P. Banjavich; George R. Morrissey, both of New Orleans, and Anthony V. Gaudiano, Metairie, all of La., assignors to Taylor Diving & Salvage Co., Inc., Plaquenenes Parish, La.

Continuation-in-part of Ser. No. 841,777, July 15, 1969, Pat. No. 3,641,777. This application Feb. 1, 1972, Ser. No. 222,577. The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Int. Cl. B23k *37/04;* **B63c** *11/00*

U.S. Cl. 61—72.3 **12 Claims**



Method and apparatus for working on submerged pipeline means where multiple forces are exerted on each of a plurality of disconnected pipeline sections to effect alignment of these sections. On at least one section one of the forces functions as a fulcrum or restraining force while another force is operable to effect alignment inducing movement of a free end of the one section.

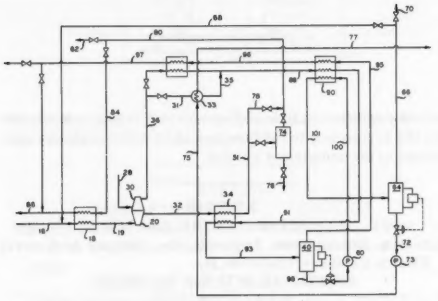
Method and apparatus for effecting the laying of a pipeline where laying is implemented in conjunction with a transportable, submerged enclosure. The enclosure provides a gaseous environment for pipeline section joinder operations and may be at least partially flooded to facilitate the moving of the enclosure away from an already laid pipeline area.

3,785,161

SEPARATION OF COMPONENTS OF VAPOROUS FLUIDS

Walter C. Hart, Bartlesville, and Suman P. N. Singh, Stillwater, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1970, Ser. No. 23,940
Int. Cl. F25j 3/06
U.S. Cl. 62—23 9 Claims



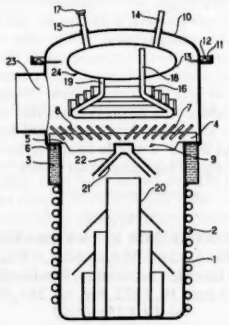
High molecular weight components are separated from lower molecular weight components of a vaporous fluid stream. A first vaporous fluid feedstock is expanded. A second vaporous fluid feedstock is compressed. Said expanded and compressed streams are then passed in indirect heat exchange relationship to cool said compressed stream. The cooled compressed stream is then passed to a separation zone to separate the more volatile lower molecular weight components from the less volatile higher molecular weight components.

3,785,162

DIFFUSION PUMP ASSEMBLY

Jacques Long, Annecy, and Jean-Jacques Bessot, Arpajon, both of France, assignors to Compagnie Industrielle des Telecommunications, Paris, France

Filed Dec. 7, 1972, Ser. No. 312,891
Claims priority, application France, Dec. 7, 1971, 7143944
Int. Cl. B01d 5/00
U.S. Cl. 62—55.5 8 Claims



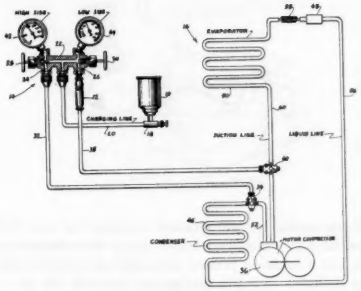
Pumping assembly in which the condensation elements for preventing oil from entering the enclosure to be emptied consists of a baffle cooled by conduction coming from a cold source and by a liquid nitrogen trap in communication with a liquid nitrogen receptacle. The cold source of the baffle is incorporated in the wall of the pump body; the liquid nitrogen receptacle is fixed under the pump cover, so that the assembly is easy to dismantle and to clean.

3,785,163

REFRIGERANT CHARGING MEANS AND METHOD

William Wagner, c/o Watsco, Inc., 1800 W. 4th Ave., Miami Beach, Fla.

Filed Sept. 13, 1971, Ser. No. 179,854
Int. Cl. F25b 45/00
U.S. Cl. 62—77 7 Claims



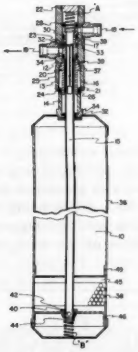
Means and method for introducing an optimum charge of refrigerant into a refrigeration or air conditioning system. When the system is charged to optimum capacity there is a melting of frost, which indicates when the charging operation is to be stopped. This is accomplished by converting a liquid refrigerant to a saturated vapor and feeding the saturated vapor into the low side of the refrigeration or air conditioning system.

3,785,164

PRECHARGED RECEIVER DRIER FOR AUTOMOBILE AIR CONDITIONING SYSTEMS

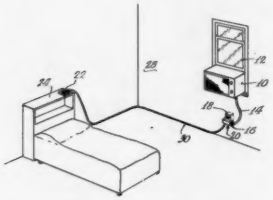
George T. Wrenn, Jr., Crittenden, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Filed May 17, 1972, Ser. No. 254,287
Int. Cl. F25b 43/00
U.S. Cl. 62—129 8 Claims



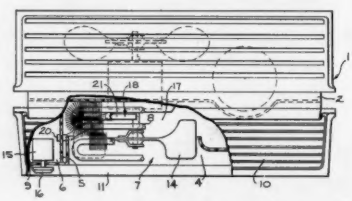
A precharged receiver drier unit for automobile air conditioning systems, including a molecular seive and an axially reciprocable valve fitting for connection to the automobile refrigerant system. The valve fitting seals the refrigerant system in one attitude as the spent receiver drier is removed and opens the refrigerant system in another attitude, as the fresh receiver drier is threadedly attached to the valve fitting.

3,785,165
AIR CONDITIONER CONTROL
Ephren Valenzuela, Jr., 1119 2nd Ave., Chula Vista, Calif.
Filed Mar. 15, 1972, Ser. No. 234,825
Int. Cl. G05d 23/32
U.S. Cl. 62—158 9 Claims



A thermostatic air conditioner control for use with individual unit air conditioners having a thermostatic switch disposed at a location remote from the air conditioner. The control includes circuitry interposed between the air conditioner and a source of electrical energy operative a selected time interval after closure of said thermostatic switch to energize a socket in which the air conditioner is plugged, and operative a selected time interval after opening of said thermostatic switch to de-energize the socket.

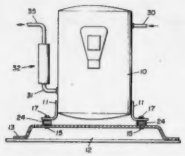
3,785,166
ROOM AIR CONDITIONER FROST PROTECTION WITH BIMETAL CONTROL THERMOSTAT
Paul D. Schrader, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed July 10, 1972, Ser. No. 270,087
Int. Cl. F25b 1/00
U.S. Cl. 62—227 7 Claims



A room air conditioner comprising a refrigeration system including an evaporator, air circulating means, and a control thermostat is provided with a conduit for directing room air over the thermostat, the conduit being heat exchanged with the evaporator so that a frosting temperature of the evaporator prevents energization of the refrigeration system by the thermostat.

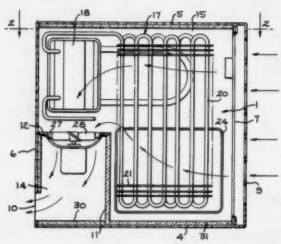
3,785,167
NOISE REDUCTION MEANS FOR CONNECTING REFRIGERANT COMPRESSORS IN AIR CONDITIONERS
Leonard J. Sahs, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa
Continuation of Ser. No. 181,858, Sept. 20, 1971. This application Dec. 11, 1972, Ser. No. 314,149
Int. Cl. F25d 19/00
U.S. Cl. 62—296 6 Claims

A refrigerant compressor in an air conditioning unit is connected to the base pan of the unit and to the refrigerant system to reduce transmission of compressor vibration to the base pan and to attenuate the dominant sound wave in the refrigerant lines produced by the pulsating refrigerant. The



means employed include coil springs and elastomeric mounts for the compressor to the base pan and a hollow cylinder connected to the compressor's outlet.

3,785,168
HOUSEHOLD REFRIGERATOR
Albert A. Domingorene, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 18, 1972, Ser. No. 316,224
Int. Cl. F25d 19/00
U.S. Cl. 62—455 5 Claims

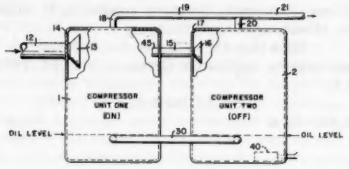


A household refrigerator cabinet comprising a condensing unit compartment at the bottom thereof includes a full width air inlet at the front of the compartment and an air outlet at a rear corner. A serpentine tube condenser mounted adjacent and substantially coextensive with the air inlet occupies the front half of the compartment while the compressor is mounted in the rear corner portion opposite the air outlet. An air circulating fan positioned between the compressor and the air outlet draws air into the compartment through the air inlet and directs air transversely of the rear portion of the compartment toward the air outlet. Partition means between the fan and the air outlet define a muffle chamber having sound absorbing walls for absorbing compressor noises.

3,785,169
MULTIPLE COMPRESSOR REFRIGERATION SYSTEM
Ernest F. Gylland, Jr., Waynesboro, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 19, 1972, Ser. No. 264,101
Int. Cl. F25b 43/02
U.S. Cl. 62—468 4 Claims

A multiple compressor refrigeration system having at least first and second hermetic shell compressors with the suction line of the system connected into the upper portion of the first compressor shell and a suction line extending from within the upper portion of the first compressor shell to within the upper portion of the shell of the second compressor and with the discharge lines of the first and second compressors connected in parallel to the high pressure line of the system. An oil equalizing conduit is connected between the crankcase por-

tions of the shells of the first and second compressors at the height of the minimum desired oil level to be maintained in the first compressor when both compressors are running with normal quantities of oil in the system.



3,785,170

ABSORPTION TYPE COOLING UNIT

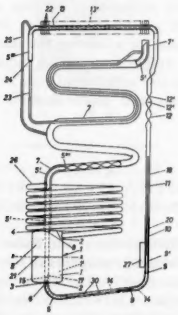
Miroslav Beranek, Donberg, Germany, assignor to Firma Varwerk & Co., Elektrowerke K G, Wuppertal-Barmen, Germany

Filed July 7, 1972, Ser. No. 269,745

Claims priority, application Germany, July 9, 1972, P 21 34 278.9

Int. Cl. F25b *15/10*

U.S. Cl. 62—489 **1 Claim**



An absorption cooling unit including a heat exchanger consisting of a plurality of telescoping tubes that comprises an inner tube which is adapted to feed a rich solution therethrough and that extends straight. An outer tube has an inner wall and the latter is engaged at least partly by the inner tubes. The inner tube has over its straight length a uniformly extending flat shape, to include flat walls. The outer tube has ribs on opposite sides which ribs are spaced apart from each other. The ribs extend up to the flat walls of the inner tube, and on one side in between relative to the ribs on the opposite side.

3,785,171

ABSORPTION COOLING DEVICE

Miroslav Beranek, Donberg, and Heinz G. Krumm, Ennepetal-Milspe, both of Germany, assignors to Firma Vorwerk & Co., Elektrowerke K G, Wuppertal-Barmen, Germany

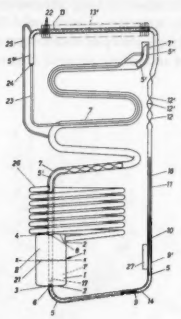
Filed June 12, 1972, Ser. No. 262,078

Claims priority, application Germany, June 11, 1971, P 21 28 931.6

Int. Cl. F25b *15/10*

U.S. Cl. 62—490 **4 Claims**

An absorption-cooling unit which comprises a collector and a plurality of conduits originating from the collector and at least partly boxed into each other. A collector housing includes at least two cap parts welded together in a cross-plane and having bottom faces. The conduits start from the bottom faces of the collector housing.



3,785,172

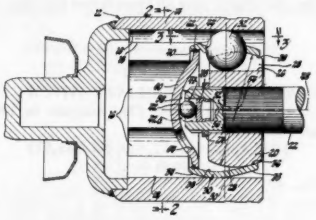
CONSTANT VELOCITY UNIVERSAL JOINT

Richard H. Parsons, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 304,000

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **6 Claims**



A constant velocity universal joint of the ball and groove type is provided with a double offset cage for locating the drive balls in the constant velocity plane. The cage has an interior bearing seat at one end only and an enlarged opening at the other end which facilitates the assembly of the joint by permitting the direct axial insertion of an inner drive member into the cage in the properly oriented position. The enlarged opening is closed by an end plate which cooperates with means carried by the inner drive member to maintain the inner drive member in bearing engagement with the cage. In one disclosed construction this means comprises an undersized ball carried in a cavity in the end of a shaft on which the inner drive member is mounted. In a second disclosed construction the means comprises a spring biased bearing shoe telescopingly carried by the shaft.

3,785,173

TUBULAR KNITTED FABRIC

Philip Michael Hanney; Thomas Raymond Stainforth, and William Arthur Bland, all of Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England

Filed Oct. 21, 1971, Ser. No. 191,230

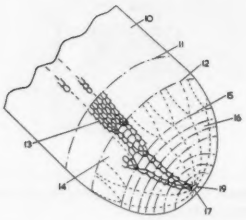
Claims priority, application Great Britain, Oct. 23, 1970, 50,450/70

Int. Cl. D04b *9/56*

U.S. Cl. 66—9 R **7 Claims**

A tubular knitted fabric having a closed end at which loops of an end course having a reduced number of wales are drawn

together in closed condition is produced on a circular knitting machine having a circular series of independently operable needles by knitting tubular fabric on the needles, transferring needle loops from selected spaced needles to intervening needles to reduce the number of wales and the number of active needles, knitting a plurality of courses on the reduced number of active needles including an end course, passing a closure



yarn successively through needle loops of the end course while held on the machine and successively releasing the needle loops of the end course from the machine when the closure yarn has been passed through them while tensioning to draw the successively released loops together so that when the final loop of the end course has been released from the machine the loops of the end course have all been drawn together to form a closure.

3,785,174

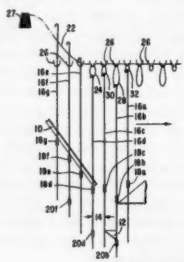
DELAYED-ACTION AUXILIARY STITCH CAMS

Lester Mishcon, Miami Beach, Fla., assignor to The Singer Company, New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,518

Int. Cl. D04b *9/00, 15/32*

U.S. Cl. 66—57 **1 Claim**



An auxiliary stitch cam is provided for use in combination with a main stitch cam in a circular knitting machine and is spaced from the main stitch cam by at least the distance between adjacent knitting needles. The main stitch cam is used to move all needles into stitch forming positions, whereas the auxiliary stitch cam is used to actuate only selected needles after they have moved through the space separating the main and auxiliary stitch cams such that yarn instead of being pulled from a supply spool as stitches are extended by the action of the auxiliary stitch cam are instead pulled from the loops of the stitches in the cloth being knitted.

3,785,175

APPARATUS FOR INSERTING WEFT THREAD BUNCHES INTO WEFT THREAD STORAGE DEVICES IN WARP KNITTING MACHINES

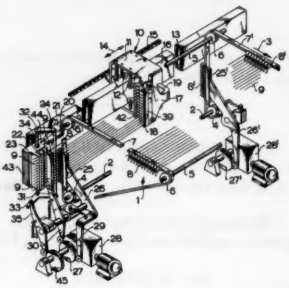
Heinz Kamp, Rickelrath, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Filed May 15, 1972, Ser. No. 253,300

Claims priority, application Germany, May 14, 1971, P 21 24 171.4

Int. Cl. D04b *23/12*

U.S. Cl. 66—84 A **6 Claims**



Apparatus for inserting bunches of weft threads into a weft thread storage device in a warp knitting machine includes means for making the weft threads ready, and a weft thread drawing-off device including a suction nozzle displaceable over the width of a fabric web being warp knitted by the machine, and means for actuating the suction nozzle to align the ends of the weft threads made ready by the readying means and to seize the weft thread ends as well as draw off the seized weft threads and insert them into the weft thread storage device.

3,785,176

THREAD SUPPLY APPARATUS FOR TEXTILE MACHINERY, PARTICULARLY CIRCULAR KNITTING MACHINES

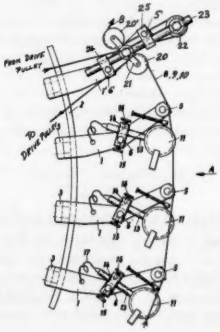
Rolf Hebbecker, Bodelshausen, and Robert Hofmann, Rottenburg, both of Germany, assignors to Fouguet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed June 13, 1972, Ser. No. 262,409

Claims priority, application Germany, June 21, 1971, P 21 30 697.8

Int. Cl. D04b *15/48*

U.S. Cl. 66—132 T **7 Claims**



To permit ready selective use of thread supply apparatus in textile machines, particularly circular knitting machines, a

plurality of support arms, all similar, are clamped to a rail on the machine (which may be a ring for a circular knitting machine). The arms carry projecting rods which extend at right angles to the planes in which drive belts are continuously driven from the machine, to permit selective vertical adjustment of thread supply apparatus to be engaged by selected ones of the drive belts. In one form of the invention, the arms carry two vertical rods, one for idler pulleys around which the drive belts can be looped and the other for the thread supply apparatus itself, so that dismounting and re-mounting of the thread supply apparatus can be eliminated by mere selective engagement of the belts with the thread supply apparatus, or the idler pulleys, respectively, the thread supply apparatus itself being mounted for both vertical as well as radial adjustment on their mounting rods.

3,785,177

DEVICE FOR SENSING A BROKEN YARN OF A CIRCULAR KNITTING MACHINE

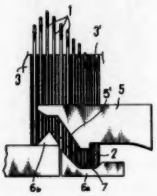
Mikuni Hino; Shozo Hanawa; Hisao Itaya; Toshihiko Okada, all of Ayabe, and Masayuki Fujiwara, Okayama, all of Japan, assignors to Gunze Company, Ltd., Kyoto, Japan

Filed July 23, 1971, Ser. No. 165,492

Claims priority, application Japan, July 29, 1970, 45/66781; July 29, 1970, 45/66782

Int. Cl. D04b *35/14*

U.S. Cl. 66—157 **7 Claims**



A device for sensing a broken yarn of a circular knitting machine of the type wherein are provided one or more latch needles which are elevationally movably positioned at the needle groove of a cylinder with one or more cam members to operate the latch needles with at least one sensing member disposed in the lower cam which is located under the latch needle butt with a means for generating an electrical signal when the latch needle falls by its own weight so that the butt touches the sensing member which is responsive thereto, and a mechanism for stopping the knitting machine, a means for feeding the electrical signal to the mechanism, and means for stopping the mechanism responsive to the transmission of the electrical signal to the mechanism.

3,785,178

WEFT KNITTED FABRIC AND METHOD OF PRODUCING THE SAME

Frantisek Machacek, Strelice U Brno; Josef Minarik, Brno; Lubomir Rossa, Brno; Zdenek Koristek, Brno, and Miroslav Brandstadter, Brno, all of Czechoslovakia, assignors to Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia

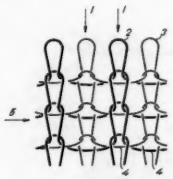
Filed Jan. 6, 1972, Ser. No. 215,899

Claims priority, application Czechoslovakia, Jan. 7, 1971, 89/71

Int. Cl. D04b *7/04, 11/04*

U.S. Cl. 66—196 **13 Claims**

Method of producing a weft knitted fabric on a rib knitting machine, and fabric produced thereby, at least a part of the fabric being a double fabric composed of two single fabrics. In the practice of the method, for the formation of connecting elements of the linking course of the double fabric, the corresponding stitches of one single fabric are formed on selected needles of one needle bed, and the corresponding stitches of the other single fabric are formed on selected second needles of a second needle bed, the second needles being opposite to the needles of the first needle bed inactive in this course, while for the laying of the sinker loops of both single fabrics in the same connecting element of the double fabric on one side of



the same, a stitch of one single fabric is transferred on to the opposite needle of the other needle bed which needle is inactive in this course, on the active needle of which needle bed the stitch of the other fabric is immediately formed. In the process of knitting the stitches of the first single fabric on the active needles of the first needle bed the stitch of the other single fabric remains on the needle of the second needle bed.

3,785,179

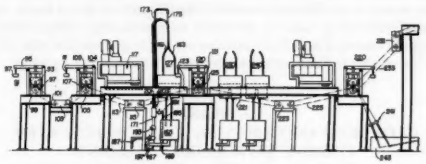
APPARATUS FOR APPLICATION OF DYES AND/OR CHEMICALS TO FABRICS, WEBS, STRANDS OF YARN, OR OTHER MATERIAL

Thomas E. Davis, and Thomas B. West, both of Burlington, N.C., assignors to Dawes Enterprises, Incorporated, Gastonia, N.C.

Filed Oct. 18, 1971, Ser. No. 189,821

Int. Cl. B05b *13/04;* **D06f** *33/02*

U.S. Cl. 68—5 D **22 Claims**

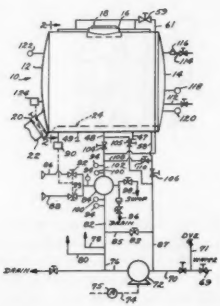


The present invention relates to apparatus and a method for space or solid dyeing yarn ends, fabrics and other materials. It comprises means for guiding the material along a predetermined path, at preferably a high continuous rate in tensioned or tensionless manner. A plurality of spraying stations are disposed along the path at spaced apart positions and are provided for transverse movement above and across the yarn ends or fabric to spray dye solutions or other chemicals into the material, with penetration being achieved due to dispersion and atomization of the dye solution emerging from the spray nozzles. The nozzles may be oriented at various angles to produce narrow or wide application. The parameters are set so that the kinetic energy of the dye solution is sufficient to penetrate the material. Steam chest (steam venturies in the case of yarn ends) are used to fix or stabilize the colors, rebulk or even enhance bulking, and wash away excess chemicals. Conventional application of background color by nip rolls or other means of conventional application, drying and other steps are incorporated in the process to achieve the overall object of space of solid dyed textile material which exhibits its original or greater bulk in a process which is repeatable.

3,785,180
DYEING APPARATUS

Roy Luckenbach, Asheboro, and John Funk, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 24, 1972, Ser. No. 237,683
Int. Cl. B05c *8/02*
U.S. Cl. 68—15 **11 Claims**

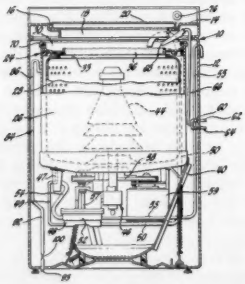


The disclosure embraces a method of dyeing and an apparatus comprising a horizontally extending generally cylindrical article dyeing vessel which is provided with a bank of nozzles extending along the interior bottom wall portion of the vessel; the nozzles are disposed to discharge liquid in a generally tangential direction with respect to the interior of the vessel; the nozzles are divided into groups each of which is connected to the out-put of a pump through one or more conduits. The conduit or conduits which deliver fluid to the nozzles are provided with a valve means so that the output of the nozzles can be controlled whereby a substantially uniform, circular fluid flow may be obtained. The vessel is provided with a suction liquid outlet slot on one side of the nozzles opposite the direction of fluid delivery and which extends the length of the vessel to enable the vessel to handle variably sized loads. A large unloading valve is provided to enable the vessel to be rapidly emptied and fluid nozzles are arranged on the interior of the vessel to flush articles out through the unloading valve.

3,785,181
CLOTHES WASHER HAVING A SIPHON-ACTUATED FLOOD CONTROL ARRANGEMENT

Melvin A. Menk, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 89,826, Nov. 16, 1970, abandoned. This application May 10, 1972, Ser. No. 252,107
Int. Cl. D06f *39/08*
U.S. Cl. 68—208 **3 Claims**

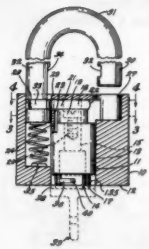


A recirculating-type domestic clothes washer has an open top water container for containing water and washing agent in which clothes are washed. A perforate spin basket is inside the water container and includes an agitator which is driven by a prime mover means beneath the water container. Water is supplied from a conduit having its terminus in an upper portion of the water container. A fluid control system prevents water from overflowing the water container in order to prevent contamination of the water supply in the upper part of the water container and the prime mover means beneath the water container. The fluid control incorporates a siphon having one portion connected to the water container at its predetermined fill level and another portion adapted for communication with a remote drain and having a bight portion at a level limiting the uppermost level of water in the water container.

3,785,182
PADLOCKS

Leo F. Van Lahr, deceased, late of Cincinnati, Ohio (by Helen F. Van Lahr, administratrix), assignor to Progress Tool and Engineering Co., Inc.

Filed Dec. 1, 1972, Ser. No. 311,390
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 B **4 Claims**

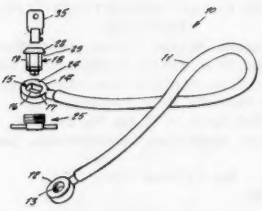


A padlock body having a key operated pin tumbler lock which turns a cam that establishes the normal locked and unlocked positions of the padlock shackle, the pin tumbler lock being operative by a second key that turns the cam to an inoperative position releasing the shackle and the pin tumbler lock from the padlock body.

3,785,183
THEFT DETERRENT FOR OFFICE MACHINES, TELEVISION SETS AND SMALL FACTORY TOOLS

Paul F. Sander, Wantagh, N.Y., assignor to I. O. Prague Corporation, Wantagh, Nassau, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,142
Int. Cl. E05b *69/00, 73/00*
U.S. Cl. 70—58 **6 Claims**



A novel tethering device for securing appliances or other portable equipment of value, to prevent a thief from taking the same, the device consisting of a flexible cable that is resistant to being cut or otherwise severed, and one end of the cable being firmly secured to the object being protected while the other end is fixed to an anchoring stationary object, at least

one of the ends including a key operated lock whereby the attachment can be disconnected.

3,785,184
LOCKING LATCH FOR A DISK-PACK STORAGE CONTAINER

Wayne M. Wirth, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

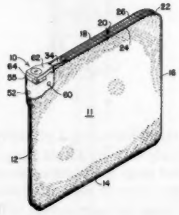
Filed Sept. 27, 1972, Ser. No. 292,488
Int. Cl. B65d *55/14*
U.S. Cl. 70—63 **2 Claims**

A squeeze operated mechanism for releasably attaching the bottom cover of a disk-pack storage container to a disk-pack which mechanism includes a key-operated lock.

3,785,185
KEEPER LOCK FOR A SLIDE FASTENER

William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,751
Int. Cl. E05b *67/38*
U.S. Cl. 70—68 **6 Claims**

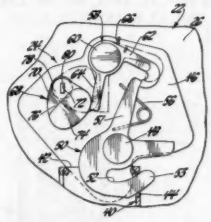


A concentric three-part, key-operated keeper lock for a slide fastener and including an outer barrel, an intermediate rotatable tubular handle disposed within the barrel and having a radial keeper flange, and an inner tumbler-type cylinder mounted in the tubular handle and having a locking bolt which releasably maintains the barrel and handle in telescoped relation. In the locked condition of the cylinder, the keeper flange closely overlies the pull tab of the slide fastener and prevents access thereto. In the unlocked condition of the cylinder, the keeper flange springs upwards under the influence of a helical compression spring and assumes a condition where it may be rotated in either direction through an angle of 360° so that no portion thereof interferes with manual access to the pull tab of the slide fastener.

3,785,186
CLOSURE LATCH ARRANGEMENT

Bruce A. James, Sterling Heights; Michael J. Lawless, Warren, and David L. Clark, Grosse Pointe Woods, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1972, Ser. No. 310,770
Int. Cl. E05c *3/24*
U.S. Cl. 70—240 **3 Claims**

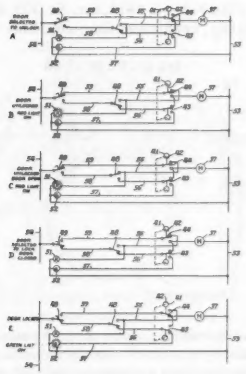


A closure latch arrangement particularly for an automobile deck lid including a latch bolt, a detent lever, an actuating cam element and a lock cylinder connected to the cam element through a disengageable connecting bar. The cam element normally rotates with the lock cylinder barrel portion to move the detent lever between a detenting and a releasing position. If the lock cylinder is forcibly removed from the deck lid the connecting bar disengages from the cam element whereupon a spring acting on the detent lever causes the latter to rotate the cam element to a remote position permitting movement of the detent lever to a dead bolt position in which the latch bolt is irreversibly maintained in a latched condition.

3,785,187
INSTITUTIONAL SECURITY SYSTEM

Francis T. Wolz, Joliet, Ill., assignor to Folger Adam Co., Division of Telkee, Inc., Joliet, Ill.

Filed June 16, 1972, Ser. No. 263,681
Int. Cl. E05b *47/02, 41/00*
U.S. Cl. 70—264 **10 Claims**



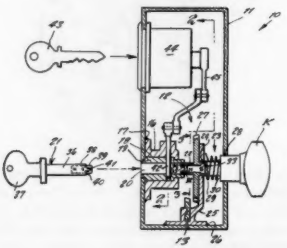
Security system for use with a plurality of swinging doors having individual key-released locks, comprising a plurality of deadbolts with a single electrically operable power means for each door controllable by control switch means located at a remote control point, safety switch means controlled by each door to prevent operation of the associated power means unless that door is closed and operable, after actuation of the control switch means, to cause automatic locking actuation of the associated plurality of deadbolts when the door is closed,

and signal means for indicating at the control point closed and open positions of each door and active or inactive positions of the deadbolts.

3,785,188
MAGNETIC CONTROLLED DOOR LOCK

Carl J. Drathschmidt, c/o Modern Annuciation, Inc., 57 Sullivan St., New York, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,710
Int. Cl. E05b *19/26, 35/10*
U.S. Cl. 70—276 **2 Claims**

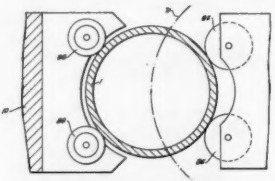


A lock for a door, the lock including a safety feature that prevents an intruder or unauthorized person from opening the lock; the safety feature consisting of a magnetically operated mechanism which is operative by a special key of unconventional design and which magnetically pulls a part of the mechanism into an operational position so it can co-operate with the remainder of the mechanism for sliding a bolt between a locked and an unlocked position.

3,785,189
TUBE CORRUGATING APPARATUS

Peter Asselborn; Werner Cramer; Bergisch Gladbach, and Heinrich Mullejans, all of Dusseldorf, Germany, assignors to Felten & Guilleaume Kabelwerke Aktiengesellschaft, Cologne, Germany

Filed Feb. 11, 1972, Ser. No. 225,420
Claims priority, application Germany, May 10, 1971, P 21 22 906.1
Int. Cl. B21d *15/06*
U.S. Cl. 72—78 **5 Claims**

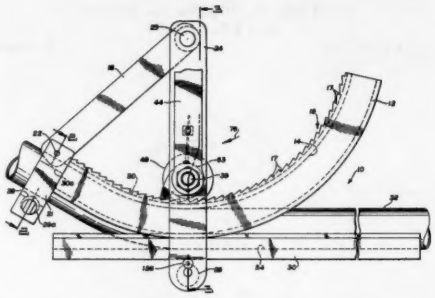


A tube is advanced lengthwise through passages provided in two longitudinally spaced universally movable bearing means of which each surrounds a portion of the path of advancement of the tube. That section of the tube which is located between the bearing means can thus flex transversely of the path without appreciable stretching of its material. A grooving unit is located between the bearing means and can orbit about the tube, engaging the same individually and successively with a plurality of grooving tools each of which comprises at least two pressure rolls, with the tools traveling about an axis at least substantially normal to the path of advancement of the tube and at such a rate of speed that the tube section is contacted by one tool at a time.

3,785,190
HIGH PRESSURE PORTABLE TUBE BENDER

Wallace J. Schall, 1101 17th St., N.W., and Richard F. Van Horn, 921 14th St., N. W., both of Canton, Ohio

Filed Oct. 13, 1972, Ser. No. 297,232
Int. Cl. B21d *7/04*
U.S. Cl. 72—149 **7 Claims**

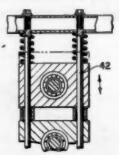


This invention relates to an improvement on U.S. Pat. No. 3,336,779 wherein a plurality of control cams are provided for progressive operative engagement of pawls carried thereon with a control rack gear to aid in obtaining high pressure bending movements in the apparatus. A pressure transmitting shoe engages with the tube to aid in retaining it in the apparatus and to aid in applying pressure to the tube as it is being bend. A handle or other drive means operatively engages a shaft on a carrier frame for cam actuation.

3,785,191
METAL STRIP ROLL FORMING STAND

Herbert F. Dewey, 1368 Mac Dr., Stow, Ohio

Filed May 26, 1972, Ser. No. 257,308
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **3 Claims**



A roll forming stand including a plurality of pairs of forming rolls for progressively shaping a light gauge metal strip, such as an aluminum metal strip to a desired shape and wherein one roll of each of the pairs of rolls is resiliently positioned for movement away from its companion roll whereby if an obstruction in rolling is met, the rolls can move apart and wherein a unitary drive system is provided for the plurality of pairs of forming rolls.

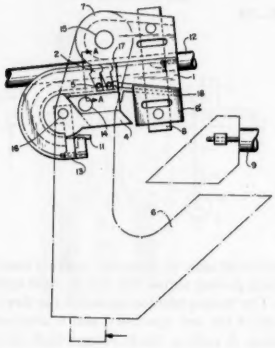
3,785,192
TUBE BENDING DEVICE

Bengt Fjellstrom, Vadsbrovagen 12, Jarna, Sweden

Filed Sept. 28, 1972, Ser. No. 293,170
Claims priority, application Sweden, Sept. 30, 1971, 12360/71
Int. Cl. B21d *11/04*
U.S. Cl. 72—319 **2 Claims**

A tube bending device for bending tubes of a circular cross-section includes a frame element and a pulley provided with a

groove which is firmly attached to the frame element. A steering element for steering the tube during bending has a lever arm which is connected to the steering element and the pulley via a first joint and a second joint. A number of lamellas are arranged in a flexible chain configuration and are linkably but



not firmly connected to each other and also provided with grooves. The lammellas are connected to each other via a wire which at its one end is connected to a self-locking abutment or heel member and at its other end to a lamella holder which is pivotably connected to the steering element via a joint which is connected to a stretchable wire.

3,785,193

LINER EXPANDING APPARATUS

Myron M. Kinley, Chickasha, Okla., and Charles W. Agee, Houston, Tex., assignors to John C. Kinley, Houston, Tex.

Filed Apr. 10, 1971, Ser. No. 242,712

Int. Cl. B21d *39/08*

U.S. Cl. 72—393 **12 Claims**

Apparatus for repairing tubular members, such as oil well casing or tubing, wherein a malleable liner is expanded into sealed engagement with the inside of such tubular member in spite of variations therein, by driving a mandrel with a collet mounted thereon through the liner, the collet having flexible fingers extending therefrom into yieldable engagement with the liner.

3,785,194

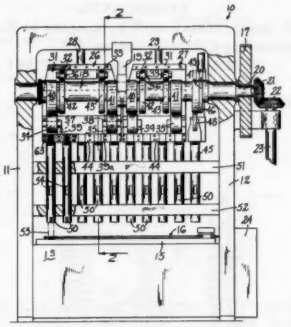
PRESS

Charles R. Bradlee, Kokomo, Ind., assignor to Textron, Inc., Providence, R.I.

Filed Sept. 29, 1972, Ser. No. 293,403

Int. Cl. B21j *9/00*

U.S. Cl. 72—405 **12 Claims**



A transfer press which utilizes two rams each carrying a plurality of forming plungers which may be independently adjusted in their rams with respect to both lash and shut height.

3,785,195

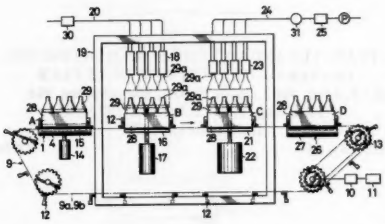
APPARATUS FOR TESTING PRESSURE RESISTANCE OF BOTTLES

Tomita Yasuhiro, Nishinomiya, and Nakayama Katsutoshi, Itami, both of Japan, assignors to Yamamura Glass Kabushiki Kaisha, Hyogo, Japan

Filed Aug. 7, 1972, Ser. No. 278,485

Int. Cl. G01m *3/02*

U.S. Cl. 73—37 **9 Claims**



An apparatus comprises a cross feed conveyor to be driven intermittently by an intermittently driving mechanism for transporting bottle-containing boxes and temporarily stopping each of the boxes at a pressure fluid supply station, pressure applying heads identical in number and arrangement to the bottles in the box for supplying a pressure fluid to the bottles to conduct a pressure resistance test, a feed conveyor for supplying the bottle-containing boxes onto the cross feed conveyor in timed relation to the intermittent travel of the latter conveyor, and a delivery conveyor for receiving bottle-containing boxes from the cross feed conveyor after they have been tested and transferring the boxes to the next process. At the pressure fluid supply station, the bottle-containing box on the conveyor is raised or the pressure applying heads are lowered to associate all the bottles with all the pressure apply-

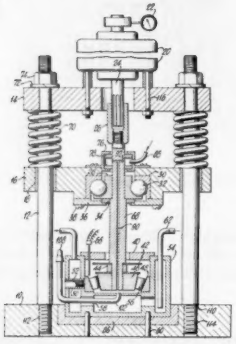
ing heads simultaneously to introduce the pressure fluid into the bottles and thereby apply pressure to the bottles in the associated state, whereby all the bottles in each of the intermittently transported boxes are subjected to the pressure resistance test.

3,785,196

APPARATUS FOR TESTING SHEAR STABILITY OF LUBRICANTS

Marvin F. Smith, Matawan, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 3, 1972, Ser. No. 240,661
Int. Cl. G01n *11/00, 33/26*
U.S. Cl. 73—64 **1 Claim**



An apparatus for rapidly determining the loss in viscosity which occurs when a lubricant containing a polymeric viscosity improvement additive is subjected to high shear is characterized by a tapered roller bearing assembly, pre-loaded to a constant torque, in which one race revolves at a constant and measurable speed in a cell containing the lubricant while maintaining the lubricant at a set temperature.

3,785,197

APPARATUS AND METHOD FOR LOCATING THE CENTER OF GRAVITY OF A GOLF CLUB

Charles P. Finn, 406 Lamberton Dr., Silver Spring, Md.

Filed Aug. 4, 1972, Ser. No. 277,970
Int. Cl. G01m *1/06*
U.S. Cl. 73—65 **4 Claims**

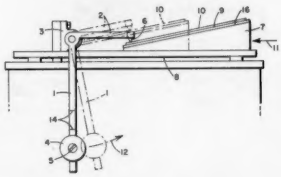
An apparatus and method for supporting a golf club by the handle and rotating the club so that the head of the club spins about its center of gravity and marking the center of gravity of the club head to indicate the desired point of contact with a golf ball.

3,785,198

SCRATCH RESISTANCE TESTER

Jakobus Heetman, Koblenz, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Filed June 13, 1972, Ser. No. 262,173
Claims priority, application Switzerland, June 14, 1971, 8626/71
Int. Cl. G01n *3/46*
U.S. Cl. 73—78 **11 Claims**



A scratch resistance or hardness tester is disclosed wherein a test point is guided across two flat parallel surfaces of a test specimen. The testing point is loaded in the direction of one of the surfaces of the test specimen and is disposed movably in that direction. A path or track, along which the test point and a receiving surface for the test specimen, against which the other of its two flat parallel surfaces is intended to fit, are movable relative to one another in order to guide the test point across the first mentioned surface of the test specimen. The path together with the receiving surfaces enclose or form an acute angle. The test point is loaded with the force of a pendulum which increases when there is an increased deflection from its rest position.

3,785,199

DYE PENETRANT INSPECTION PROCESS

Orlando G. Molina, Westminster, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 852,458, Aug. 22, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 118,979
Int. Cl. G01n *19/02*
U.S. Cl. 73—104 **1 Claim**

Viscous compositions of gel-like consistency are disclosed for removing excess dye penetrant from parts subjected to liquid dye penetrant inspection. The compositions comprise a cleaner, a carrier, and a viscosity increasing agent, and have a viscosity between 10 and 100 poises at 100 reciprocal seconds.

ERRATUM

For Class 073—134 see:
Patent No. 3,785,216

3,785,200

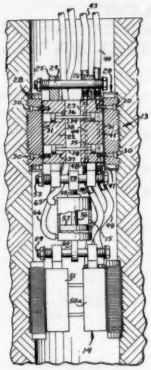
APPARATUS FOR IN SITU BOREHOLE TESTING

Richard L. Handy, Des Moines, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed June 1, 1972, Ser. No. 258,548
Int. Cl. E21b *49/00*
U.S. Cl. 73—151 **7 Claims**

Borehole test apparatus includes upper and lower laterally expandable side pressure units joined by a vertically expandable piston and cylinder unit. The laterally expandable side units are provided with diametrically opposing gripper surfaces to exert normal pressure to the sides of the borehole at vertically spaced locations when they are expanded. After the side pressure units are expanded to exert a predetermined normal force, the vertical cylinder unit is expanded to urge the side pressure units apart. One side pressure unit acts as a reaction base and the other shears the soil surrounding the

borehole. The maximum vertical separation force tolerated by the soil is a measure of its shearing strength, and is recorded as



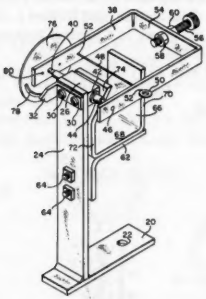
a function of the normal pressure exerted by the expandable side pressure units to obtain the cohesion C and internal friction angle of the soil, rock, or other material tested.

3,785,201

DETERMINING HARDNESS OF SOFT MATERIALS

Manuel Jesus Rubio, Bridgeport, Conn., and Victor Mario Leal, Monterrey, Mexico, assignors to Roberto Gonzalez Barrera, Monterrey, Mexico

Filed Nov. 3, 1971, Ser. No. 195,315
Int. Cl. G01n *33/10*
U.S. Cl. 73—169 **12 Claims**



In determining hardness of soft materials a cutting edge which is preferably blunt and preferably a wire, is pushed or pulled into the test specimen in a direction transversely to the cutting edge under a force, and the relation of the force, the length of cut and the time is determined. The force is preferably applied progressively diminishing from a maximum at the time of application to a minimum at the end of test. Either the length of cut or the time is preferably a variable. The force application is preferably tangential to the arc of a circle.

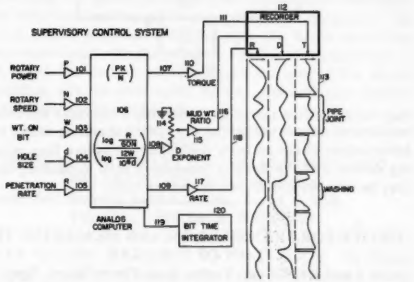
The area of the cutting edge exposed to the sample is preferably constant or substantially constant. In the preferred embodiment three faces of the sample are exposed to the cut.

3,785,202

ELECTRONIC SUPERVISORY CONTROL SYSTEM FOR DRILLING WELLS

Ray M. Kelseaux, Tulsa; Harold J. Dobbs, Bartlesville, both of Okla., and Frank D. Priebe, Houston, Tex., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed June 25, 1971, Ser. No. 156,645
Int. Cl. E21b *45/00*
U.S. Cl. 73—151.5 **10 Claims**



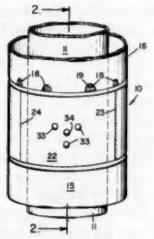
An electronic supervisory control system is disclosed herein wherein rotary power, rotary speed, bit weight, hole size, penetration rate and mud weight ratio are utilized in conjunction with analog and electronic sensing means in order to afford drilling personnel a supervisory control system over drilling operation. Recorded information includes the rate of penetration, corrected *d* exponent and rotary torque, which may be visually recorded and electronically stored for use for both supervisory control and simultaneous understanding of the monitored drilling variables and their effect upon the drilling operation.

3,785,203

WAVE FORCE TRANSDUCER

Michael M. Mull, Van Nuys, Calif., assignor to Mechanics Research, Inc., Los Angeles, Calif.

Filed Mar. 24, 1972, Ser. No. 237,869
Int. Cl. G01p *5/02*
U.S. Cl. 73—170 A **3 Claims**



A wave force transducer, including a shell mounted around a support column by a set of flexures which permit substantially only lateral movement of said shell and a set of hydraulic load cells spaced around said shell between said shell and support column which measure the total wave force acting upon said shell.

3,785,204

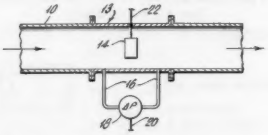
MASS FLOW METER

Edward L. Lisi, Freeport, N.Y., assignor to Esso Research Engineering Company, Linden, N.J.

Filed Apr. 6, 1972, Ser. No. 241,140
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 M **1 Claim**

A mass flow meter determines the weight flow of a fluid stream by combining in series a density-sensitive flow measur-

ing device and a density-insensitive flow measuring device. The density-insensitive flow measuring device is a vortex-shedding meter which requires no moving parts to determine volumetric or velocity flow. In combination with the vortex-shedding meter, the density-sensitive flow measuring device



may be an orifice meter or preferably a pressure differential instrument connected across the vortex shedding meter itself. Information obtained from the density-sensitive flow measuring device and the density-insensitive flow measuring device may be combined to obtain mass flow rate.

3,785,205
DEVICE FOR TRANSFERRING AND MEASURING THE FLOW OF PURE GAS

Andre Lambert, Gif-sur-Yvette; Jean-Pierre Soury, Igny, and Gaston Sifre, Orsay, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

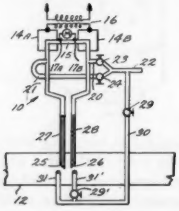
Filed June 15, 1972, Ser. No. 262,945
Claims priority, application France, June 5, 1971, 7121777
Int. Cl. G01f *1/00*
U.S. Cl. 73—198 **10 Claims**

Device for transferring and measuring the flow of very pure gas, comprising a connection block, to which is linked, upstream, in the direction of flow of the gas, a flowmeter having a calibrated tube and a float, and inside which are arranged a flow regulating valve and two stop valves each ensuring communication with a gas utilization circuit. The valves and the connection pipes inside the block are arranged so that the paths followed by the gas inside the block are the same whatever the utilization circuit. The adjusting valve and the flowmeter are interchangeable.

3,785,206
FLUID FLOW MEASURING DEVICE

James M. Benson, and William C. Baker, both of Hampton, Va., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Apr. 26, 1972, Ser. No. 247,841
Int. Cl. G01f *1/00*
U.S. Cl. 73—212 **8 Claims**

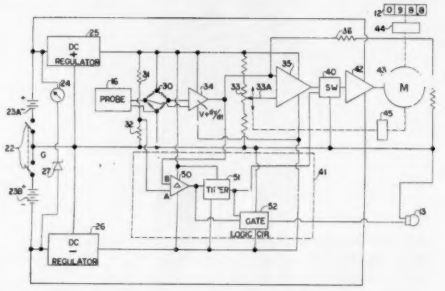


Apparatus for measuring the velocity of fluid flow includes a form of pitot tube having orifices that develop a differential pressure related to the stream velocity and a means of directing an auxiliary stream of gas at or near one of the orifices. The auxiliary stream is arranged to be deflected by the main stream so that in the range of low velocities of the main stream, wherein pitot tubes are insensitive, the sensitivity of the apparatus is enhanced. In a preferred form of the device, a purged thermal flowmeter connected to the two orifices senses the velocity of the main stream.

3,785,207
DIGITAL READOUT INSTRUMENT EMPLOYING ENABLEMENT CIRCUITS FOR SYSTEM WHEN UNDER READING CONDITIONS

Janusz Brzezinski, c/o John E. Wagner, 1041 E. Green St., Suite 202, Pasadena, Calif.

Filed June 28, 1971, Ser. No. 157,465
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **14 Claims**

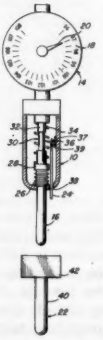


A digital readout thermometer employing a resistance bridge with a temperature sensitive element such as a thermistor in one leg of the bridge and including a motor driven adjustable resistance or potentiometer for rebalancing the bridge. A servo amplifier, d.c. motor and digital counter provide a reading indicative of the temperature. The circuit includes a differentiator for accelerating the time response of readout. It also includes timer, a comparator, logic circuit and visual indicator for enabling the readout system only when the transducer senses the temperature in the range to be read and the logic circuit is operative to enable the visual indicator when a temperature in the required range has been sensed for a period sufficient for the counter to complete its movement to the correct reading. The thermometer is automatically powered when the probe is removed from its storage tube.

3,785,208
CLINICAL THERMOMETER

Louis P. Marsilia, East Boston, and Robert J. Moran, Littleton, both of Mass., assignors to Cardinal Instruments Corporation, Cambridge, Mass.

Filed May 11, 1971, Ser. No. 142,241
Int. Cl. G01k *5/42*
U.S. Cl. 73—368.4 **8 Claims**



A quickly responsive, dial-type clinical thermometer is provided to give fast, accurate and easily readable clinical temperatures. A temperature sensitive liquid is sealed in a sensing probe element and expands proportionately with a rise in temperature. The liquid in the probe communicates with an at-

tached bellows which is flexed by the expanding liquid to actuate a dial indicator drivingly connected to the bellows. The indicator dial is graduated with temperature markings. A simple locking arrangement holds the indicator needle at the highest recorded temperature until reset by replacing a disposable sterile probe cover. Placement of a new cover over the probe tip automatically resets the indicator needle.

3,785,209
PRESSURE GAUGE

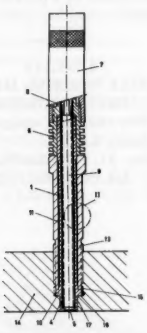
Johannes Schijf, Delft, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Hehoeve Van Nijverheld, Handel en Verkeer, The Hague, Netherlands

Filed Oct. 28, 1971, Ser. No. 193,508

Claims priority, application Netherlands, Oct. 29, 1970, 7015908

Int. Cl. G01l 7/00

U.S. Cl. 73—395 **5 Claims**



A pressure gauge for extrusion and injection moulding machines, in which a push rod connects a membrane at one end and a displacement meter at the other end of the casing. The usual thermal sensitivity of this kind of pressure gauges has been suppressed by the use of a hollow, thin-walled push rod that fits in the casing with a narrow clearance.

3,785,210
BALANCING APPARATUS FOR BALANCING OUT-OF-BALANCE BODIES

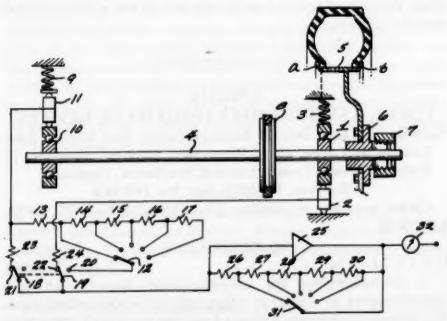
Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG, Damstadt, Germany

Filed Feb. 3, 1972, Ser. No. 223,213

Claims priority, application Germany, Mar. 26, 1971, P 21 14 770.6

Int. Cl. G01m 1/22

U.S. Cl. 73—459 **10 Claims**



An apparatus for balancing a body such as a motor vehicle wheel in two balancing planes whereby a driving shaft is supported by two separated bearings, one movable and the other immovable and, each having a force measuring device associated with it for each measuring the force which the shaft applies to its associated bearing. The force measuring devices are connected via suitable resistances to a two position switch which in turn is connected to an indicator for displaying imbalance. The switch has a first position connecting both force measuring devices to the indicator so that, when the body is mounted with one of the planes coinciding with the immovable bearing, the indicator displays the imbalance in that plane after imbalance in the other plane has been corrected. The second switch position connects only the force measuring device associated with the movable bearing to the indicator so that, when the body is mounted with the one of the planes coinciding with the immovable bearing, the indicator displays the imbalance in that other plane.

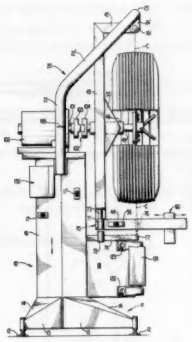
3,785,211
METHOD AND APPARATUS FOR TRIMMING AND BALANCING VEHICLE WHEELS

Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak.

Filed Dec. 7, 1970, Ser. No. 95,717

Int. Cl. G01m 1/12

U.S. Cl. 73—480 **11 Claims**



A method and apparatus for trimming tires and balancing wheels which includes a fixed frame structure pivotally supporting thereon a wheel-support frame that carries a rotatable wheel-mounting assembly, adapted to be selectively connected with an electric motor by a clutch; the wheel support frame includes a displaceable weight as well as a pointer to indicate any imbalance in the wheel when the clutch is disengaged and when a latch mechanism is unlatched to permit free pivotal movement of the wheel-support frame together with the wheel mounted thereon; the fixed frame structure also pivotally supports a trimming apparatus which can be manually pivoted and adjusted for removing any out-of-round conditions of the tread surface of the tire when the latter is rotated with the clutch engaged and the latch mechanism latched.

3,785,212
MOTION ALTERING APPARATUS

Robert J. Eminger, Fort Wayne, Ind., assignor to Windamatic Systems, Inc., Ft. Wayne, Ind.

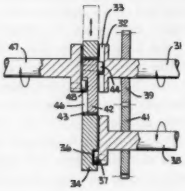
Filed Feb. 23, 1973, Ser. No. 335,240

Int. Cl. F16h 21/00

U.S. Cl. 74—23 **6 Claims**

Disclosed is an apparatus for changing rotary driving motion of uniform velocity into driven rotary motion whose velocity varies in a uniformly recurring pattern. The length of and number of minimum velocity or "dwell" periods is adjustable over a wide range. The apparatus can be utilized in actuating the movement of a winding head for winding wire on electric stators, or the like. An offset driving crank drives a Scotch yoke slide, the slide carrying a freely rotatable

member. The rotatable member has a pin and slot connection to the driving or input shaft and this input shaft also drives the offset driving crank. The freely rotatable member has a pin and slot connection to the output or driven shaft.



3,785,213

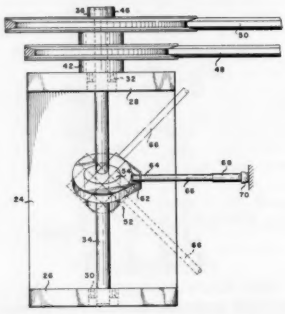
MECHANICAL MOVEMENT

John L. Berggren, 1148 Clark Ave., Billings, Mont.

Filed Mar. 24, 1972, Ser. No. 237,633

Int. Cl. F16h *33/00*

U.S. Cl. 74—60 **10 Claims**



This invention is a mechanical movement for converting reciprocating linear motion to rotary motion. An arm is pivotally connected at one end to a source of reciprocating motion. The opposite end of the arm is connected to a driving member mounted on a rotatable shaft at approximately a 45° angle to the longitudinal axis of the member. As the arm moves in response to the reciprocating motion, corresponding movement of the opposite end of the arm is effected, producing actuation of the driving member to rotate the shaft on which the driving member is mounted.

3,785,214

FLUID PRESSURE OPERATED ROTARY ACTUATORS

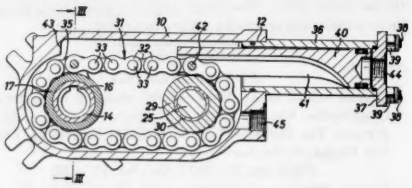
John Cecil Ridley, Newcourt House, New St., Lymington, England

Filed Mar. 27, 1972, Ser. No. 238,221

Int. Cl. F16h *29/02*

U.S. Cl. 74—89.21 **7 Claims**

A fluid pressure operated rotary actuator in which rectilinear movement of a piston in a cylinder by the action of fluid pressure is converted into rotary movement of an output shaft. The piston is fixed to a closed loop pivoted link chain of the kind known as a leaf chain, which passes around the output shaft and a rotary idler member so that one run of the closed loop is substantially parallel to the line of movement of the piston. The chain is fixed to the output shaft at a point spaced from the point at which it is fixed to the piston. The output shaft, rotary idler member and the closed loop of the casing may be in communication with the cylinder or may be separated from the cylinder by a packing gland through which extends the piston rod.



3,785,215

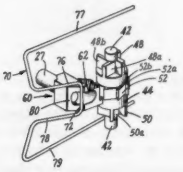
PAWL AND RATCHET INDEXING MECHANISM FOR ON-OFF SWITCHING

Joseph P. Stefani, Warwick, R.I., assignor to General Electric Company, Providence, R.I.

Filed Mar. 31, 1972, Ser. No. 239,908

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **6 Claims**



An improved indexing mechanism is provided for generating an indexed rotary motion from a reciprocating plunger motion. In the mechanism a plunger adapted for linear motion along its longitudinal axis has a pivotable actuator mounted at its end. On a plunge stroke the actuator pushes on a tooth of a set of ratchet teeth mounted about a rotor where the rotor axis is set generally at a right angle to the plunger axis. On a return stroke, under the urging of a return spring, the actuator pivots about its point of support on the plunger as the actuator passes over the ratchet.

3,785,216

CONTROL SYSTEMS FOR HYDROKINETIC DEVICES

Norman McLean; Donald Bernard Lewis, and Robert John Lawson McLaren, all of Worcester, England, assignors to Redman Heenan Froude Limited, Worcester, England

Filed Nov. 15, 1971, Ser. No. 198,564

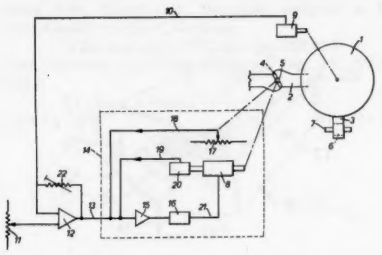
Claims priority, application Great Britain, Nov. 27, 1970, 56410/70

Int. Cl. G01l *3/20*

U.S. Cl. 73—134 **5 Claims**

A control system for a hydrokinetic device such as a dynamometer in which an electrical signal dependent upon the difference between a desired and the measured value of an operating parameter of the device is applied to a control unit. The latter is adapted to control the position of a fluid regulat-

ing valve associated with the inlet or outlet of the device, the valve being specially characterised so that displacement



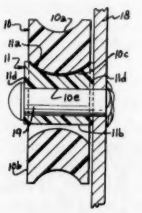
thereof is directly proportional to the torque developed by the device.

3,785,217

ROLLER ASSEMBLY AND METHOD OF MAKING THE SAME

Warren A. Peura, Madison, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed July 17, 1972, Ser. No. 272,553
Int. Cl. F16h *55/36;* **B32b** *23/00*
U.S. Cl. 74—230.3 **16 Claims**



A roller assembly having an inner stator member and an outer roller member rotatably supported on the stator member and method of making the same in which the roller member is molded in an annular form with an inner bearing surface of circular cross-section extending axially through the roller member, and the inner stator member is thereafter injection molded inside the inner bearing surface, of a plastic material having a molding shrinkage characteristic such as to provide sufficient clearance between the stator and roller members for a running fit therebetween. In molding the stator member in the roller member, circumferentially spaced portions of the inner bearing surface of the roller member are preferably sealed from the mold cavity for the stator member so that the stator member is formed with a non-circular cross-section with only circumferentially spaced portions having a shape conforming to and in a running fit with the inner bearing surface on the roller member.

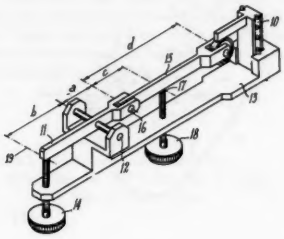
3,785,218

COARSE AND FINE ADJUSTMENT MEANS

Andre Louis Czapek, Le Perreux, France, assignor to Societe d'Optique, Precision Electronique et Mechanique-Sopelem, Paris, France

Filed May 9, 1972, Ser. No. 251,735
Claims priority, application France, May 24, 1971, 71.18559
Int. Cl. G05g *1/00*
U.S. Cl. 74—479 **7 Claims**

A coarse and fine adjustment device especially for focusing a lens system in which both the coarse and fine adjustment are transmitted by two levers pivotally connected together. The coarse or fine adjustment levers are moved by control means



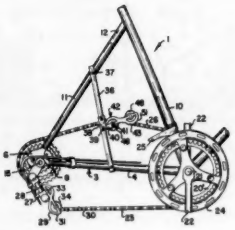
which may comprise screw-threaded pins, cam surfaces or an inclined plane acting upon the levers. Only one of the levers is in actual contact with the element to be moved.

3,785,219

COASTER BRAKE SYSTEM FOR A MULTI-SPEED BICYCLE

Joseph L. Anthamatten, Precious Blood Seminary, Ruth Ewing Rd., Liberty, Mo.

Filed June 5, 1972, Ser. No. 259,568
Int. Cl. F16h *11/04*
U.S. Cl. 74—217 B **8 Claims**



A mechanism for maintaining tension in the drive chain on a multi-speed bicycle having an exposed drive ratio change device with a plurality of different sized rear sprockets and front sprockets and having a coaster brake actuated by reverse rotation of the front sprockets.

3,785,220

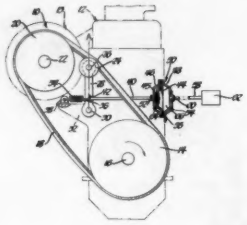
CLUTCH DEVICE

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 295,922
Int. Cl. F16h *7/12*
U.S. Cl. 74—242.1 FP **5 Claims**

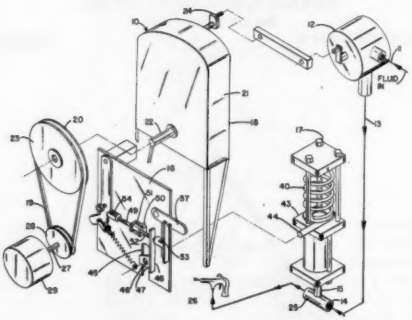
The drawings illustrate a belt-type clutch device wherein a pulley rotatably mounted on an arm pivotally mounted within the perimeter of an endless belt is urged or "teased" by a relatively small actuating force communicated thereto from any suitable power source, into a self-energizing or wedged rela-

tionship with the belt to thereafter be urged by the tractive action of the belt into an angular relationship therewith which



results in the belt being fully tightened about its associated driving and driven pulleys.

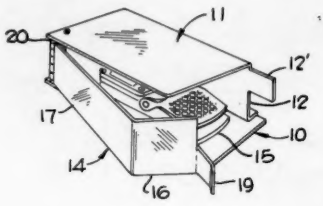
3,785,221
LOAD CONTROL DEVICE
Ralph R. Fifield, 49 Bonnie Brae, Novato, Calif.
Filed May 10, 1971, Ser. No. 141,506
Int. Cl. F16h *7/12*
U.S. Cl. 74—242.11 P **4 Claims**



A load control device for continuously running a source of power in a hydraulically activated system is disclosed having a housing carrying an idler bearing adapted to engage a belt driven by the source of power. A fluid inlet is associated with the housing and is in fluid communication with means for disengaging the bearing from the belt under no-load or dead-end conditions in the system.

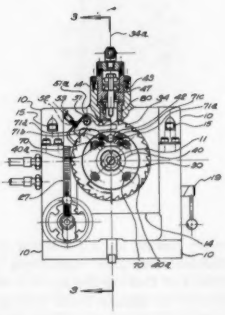
3,785,222
FOOT CONTROL GUARD
James C. Dawson, Kirkwood, Mo., assignor to Bohn and Dawson, Inc., St. Louis, Mo.
Filed Nov. 15, 1972, Ser. No. 396,704
Int. Cl. F16p *3/00*
U.S. Cl. 74—561 **10 Claims**

This foot control guard includes a base, mounting a cover, side guards and a front closure and provides substantially complete enclosure for the control. The front closure is provided by a side-opening gate, which is hingedly mounted to the base about a rearwardly disposed vertical hinge axis. A foot-engageable lip is provided on the front closure and the gate is



substantially ell-shaped having a length greater than the width to facilitate the side opening action.

3,785,223
ROTARY INDEXING MACHINE
Richard C. Steele, Warwick, R.I., assignor to The Cleveland Twist Drill Company, Cleveland, Ohio
Filed June 5, 1972, Ser. No. 259,662
Int. Cl. B26h *29/32*
U.S. Cl. 74—815 **19 Claims**

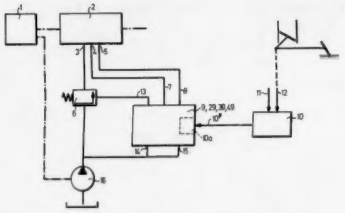


A rotary indexing machine comprising a housing, a spindle mounted for rotation in the housing, an index plate mounted on the spindle substantially coaxially therewith, means for mounting a workpiece-holding member substantially coaxially with the spindle, a fluid motor for continuously rotating the spindle in one direction about its axis, the motor being located within the housing substantially concentric with the spindle and positioned between the index plate and the means for mounting the workpiece-holding means, means for periodically arresting rotation of the spindle for a predetermined interval of time during which the workpiece may be machined, and means for periodically releasing the rotation arresting means. The means for periodically arresting rotation of the spindle for automatic step indexing, may be easily rendered inoperative so that thereafter the spindle will be rotated continuously without step indexing. The preferred embodiment also includes means for moving the spindle axis through an arc relative to a horizontal position and means for adjusting the spindle angularly about its axis and relative to the location plane of the index plate, whereby the location sides of the notches of the index plate may be accurately aligned with premachined notches existing in the workpiece.

3,785,224
ELECTROHYDRAULIC TRANSMISSION SHIFTING APPARATUS FOR A MOTOR CAR

Gerhard Will, Beutelsbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 13, 1972, Ser. No. 288,654
Claims priority, application Germany, Sept. 13, 1971, P 21 45 666.6
Int. Cl. B60k *21/00*; **F16h** *3/74*
U.S. Cl. 74—865 **14 Claims**

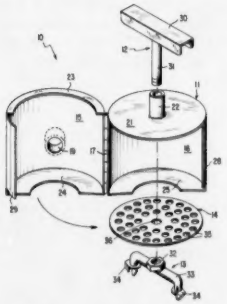


An electrohydraulic transmission shifting apparatus includes an electrohydraulic transducer with a throttle valve operated by an electromagnet and a pressure-limiting valve which effects a kick-down signal at a predetermined maximum pressure when the gas pedal is fully depressed. Fluid under pressure is supplied from a pump to the valves. A fluid-pressure control flow, limited by the pressure-limiting valve, is supplied to a main valve connecting a pump with the shifting means of a transmission so that the valve operates in accordance with the control flow. The pump is also connected with the kick-down shifting means of the transmission by a kick-down valve when the electrohydraulic transducer is operated upon a kick-down gas pedal operation.

3,785,225
SAFETY DEVICE FOR REMOVING RADIATOR CAPS

James J. McKenna, Lake Worth, Fla., and Roy Harter, late of Palm Springs, Fla., assignors to H. Elisabet Harter surviving spouse of Roy S. Harter, Palm Springs, Fla.

Filed May 25, 1972, Ser. No. 256,823
Int. Cl. B67b *7/44*; **B25b** *29/00*
U.S. Cl. 81—3.1 R **9 Claims**

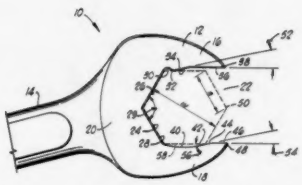


There is disclosed a radiator cap removing device which comprises a steam retainer chamber positionable over a radiator cap. The steam retainer chamber has an opening in the bottom which is at least as large as the neck of the radiator to which the radiator cap is attached but smaller then the greatest width of the radiator cap. The radiator cap projects though this opening. A shaft is slideably and rotatably positioned in the retainer chamber. This shaft includes a cap removal means secured at one end thereof within the retainer and a gripping means at the other end of the shaft outside of the retainer chamber. There is also disclosed a pressure release plate containing a number of orifices slideably positioned on the shaft above the cap removal means. When used to remove a radiator cap from a hot radiator, the device shields the person using the tool from being burned or scalded by steam or water emitting from the radiator and prevents water and the radiator cap from being blown back onto the engine or the person using the device.

3,785,226
LOCKING WRENCH

Jerry E. Ward, Star Rt. Box 222, Vian, Okla.

Filed May 18, 1972, Ser. No. 254,433
Int. Cl. B25b *13/46*
U.S. Cl. 81—119 **13 Claims**

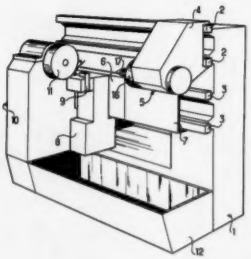


An open ended wrench having a hexagonal-headed threaded member-engaging cavity formed in the wrench head configured such that when torque is applied through the wrench to a hexagonal-headed member engaged in the cavity the wrench is effectively locked onto the member and is prevented from slipping from engagement therewith. In one form the novel aspects of this invention are applied to an otherwise conventional open ended wrench; and in another form the novel aspects of this invention are applied to a ratchet-type open ended wrench.

3,785,227
LATHE

Paul Wolff, Illkirch Graffenstaden, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 14, 1971, Ser. No. 189,421
Claims priority, application France, Oct. 14, 1970, 7037161
Int. Cl. B23b *3/00*, *19/02*, *17/00*
U.S. Cl. 82—2 **21 Claims**



A lathe has a bedplate to which is mounted a lathe bed defining first and second slideways and a fixed headstock holding a rotatable spindle. A movable tailstock slides on at

least one of the slideways such that the spindle axis lies in a first plane and the first and second slideways lie in a common second plane perpendicular to the first plane and equally spaced therefrom.

3,785,228

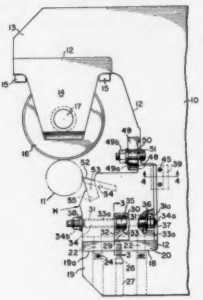
FRONT RELEASABLE, LATERALLY CLAMPING, QUICK-CHANGE TOOL HOLDER FOR AN ORBITING CRANKSHAFT LATHE GIRT

Thomas E. Clagett, and Martin W. Dahl, both of Saginaw, Mich., assignors to The Wickes Corporation, Saginaw, Mich.

Filed May 22, 1972, Ser. No. 255,444

Int. Cl. B23b *29/00, 5/18;* **B26d** *1/00*

U.S. Cl. 82—36 B **17 Claims**



A tool holder and girt assembly wherein a tool holder is mounted for fore and aft movement perpendicular to the crankshaft axis of rotation on a girt way. It is secured in position by a laterally movable clamp member which anchors the tool holder in machining position on the girt support. The lateral clamping force is created by an accentric part, provided on a front to rear extending rotatable clamp actuator, which is manipulatable from the front of the tool holder.

3,785,229

APPARATUS AND METHOD FOR CUTTING GLASS

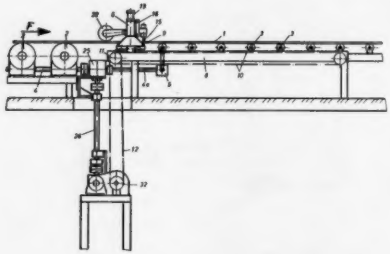
Friedrich Halberschmidt, Merkstein, and Josef Audi, Aachen, both of Germany, assignors to Saint-Gobain, Neuilly-sur-Seine, France

Filed Mar. 21, 1972, Ser. No. 236,601

Claims priority, application France, Mar. 22, 1971, 7109942

Int. Cl. C03b *33/02;* **B26d** *3/08, 5/38*

U.S. Cl. 83—6 **3 Claims**



A method of scoring glass at a selected distance from the end of an advancing ribbon of glass which comprises poising scoring means in proximity to the ribbon, moving the ribbon past the scoring means and measuring the length of glass which passes the scoring means, accelerating the scoring means parallel to the moving ribbon and out of contact with it until its speed is slightly less than that of the ribbon as the end of the selected length approaches the scoring means, attaching the moving ribbon and scoring means together as the end of the length to be cut reaches the scoring means whereby they move in unison, activating the scoring means, disengaging the scoring means, and returning it to its original position.

3,785,230

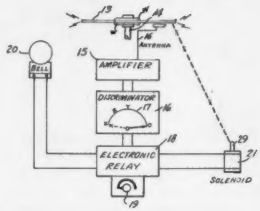
AUTOMATIC SAFETY BRAKE FOR ROTARY BLADE EQUIPMENT

Robert C. Lokey, Tamal, Calif., assignor to Lokey Tool, Inc., San Leandro, Calif.

Filed Nov. 8, 1972, Ser. No. 304,726

Int. Cl. B27h *19/02, 19/04*

U.S. Cl. 83—58 **5 Claims**



An automatic safety brake for rotary blade equipment in which a capacitance proximity sensor utilizes the spinning blade as an antenna so that when any portion of the body of the user approaches the blade to closely a cam brake will be instantaneously actuated to stop the rotation of the blade before the body of the user comes in contact with the cutting edge of the blade. In one form of the invention cam members are applied to opposite side faces of the blade to serve as a brake for the instanteous stopping of the rotation of the blade. In another form of the invention a rubber wedge is driven into the cutting edge of the blade so as to instantaneously stop the rotation of the blade. In both forms of the invention the sensitivity of the sensor may be adjusted to suit the capacitance effect of the individual user of the equipment.

3,785,231

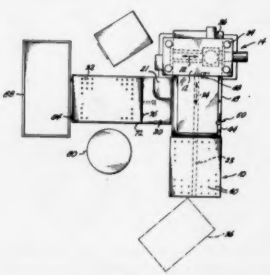
APPARATUS FOR CUTTING BLANKS

Willett R. Lake, Jr., and James O. Ward, both of Portland, Oreg., assignors to Pak-Well Corporation, Denver, Colo.

Filed Aug. 18, 1972, Ser. No. 281,836

Int. Cl. B26d *3/00, 7/06*

U.S. Cl. 83—103 **6 Claims**



Apparatus for cutting blanks from a sheet. A method of cutting such blanks using a cutting table and cutting die which are relatively movable to position the die over different re-

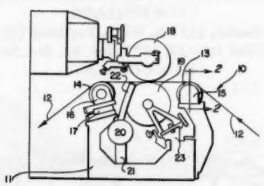
gions of a sheet to ready the die for cutting. The apparatus specifically disclosed comprises a die press having a vertically movable cutting die which is forced downwardly to cut a blank. A horizontally disposed cutting table below the die is movable in increments along a horizontal path between retracted and extended positions, to advance sheets supported on the table to different positions under the die. A sheet is supplied to the cutting table from a support table disposed at one end of the cutting table with the latter in its retracted position. Sheets are deposited on such support table from a supply. Sheets moved off the cutting table move over a drop table and thence onto an ejector table, such tables being aligned in a direction extending transversely of the path of movement of the cutting table. Clamps on the cutting table hold a side margin of a sheet, with the sheet edge bounding such side margin positioned parallel to the path of movement of the cutting table and remote from the side of the cutting table which is adjacent the drop table. Using the method of the invention, these clamps are released in succession, and the cutting of blanks is performed using a last sequence of cuts which occurs along the side margin of the sheet held by the clamps.

3,785,232

WEB SUPPORT TABLE

Kenneth G. Frye; Robert G. Lucas, both of Downingtown; Kenneth L. Seidel, Temple, all of Pa., and Soma M. Rohosy, Sterling Forest, N.Y., assignors to Beloit Corporation, Beloit, Wis.

Filed Dec. 16, 1969, Ser. No. 885,548
Int. Cl. B23d *19/06*
U.S. Cl. 83—156 **12 Claims**



A web conveying apparatus having a support "table" portion where the web is moved over two parallel rollers under tension to flatten the web between the rollers to treat the flattened portion of the web. At least one and preferably both of the rollers are made up in a plurality of longitudinally aligned sections with a spacing element, preferably of wear resistant material, located between and axially spacing adjacent sections of each roller. The two rollers are located at the top of the legs of a U-shaped frame and when the table portion is used with a slitting apparatus, the lower slitter and a trim removal pipe may be located in the space between the legs of the U.

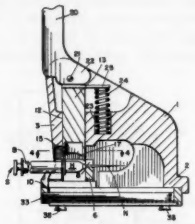
3,785,233

CUTTING PUNCHES FOR DESTROYING HYPODERMIC SYRINGES

Murry M. Robinson, 1712 I St., N.W., Washington, D.C.

Filed May 9, 1972, Ser. No. 251,695
Int. Cl. B23d *15/04*
U.S. Cl. 83—167 **8 Claims**

A cutting punch for destroying effectively the components of hypodermic syringes, after their use, in order to prevent the salvaging thereof from waste receptacles for eventual use as essential paraphernalia in the illicit drug field. An annularly shaped female cutter member is fitted with diametrally opposed slots for supporting the cannular needle and the syringe elements extending therefrom in horizontal position, and a cylindrical cutting punch is brought downwardly into engagement with the cutter member to sever the needle and another



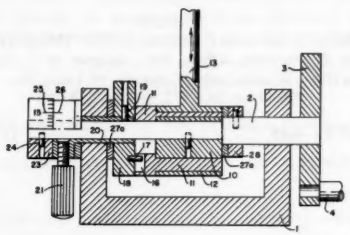
part of the syringe, to destroy the assembly rapidly in a manner rendering impossible its repeated use.

3,785,234

DEVICE FOR AN INFINITE ADJUSTMENT OF THE SPECIMEN STROKE IN MICROTOMES AND ULTRAMICROTOMES

Hellmuth Sitte, Homburg-on-Saar, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Dec. 11, 1972, Ser. No. 313,912
Int. Cl. B26d *7/06*
U.S. Cl. 83—414 **10 Claims**



A microtome having continuous adjustment to vary the length of the specimen cutting stroke is provided by a pair of eccentric members mounted on a drive shaft with one eccentric member selectively positionable about the periphery of the other eccentric member in order to provide a continuous range of eccentricity with a corresponding adjustment range in the specimen stroke. A cam may be also connected to the drive shaft and adjustable about the drive shaft to operate a switch for controlling the return stroke of the specimen arm. In motor driven microtomes, a means for varying the cutting and/or return stroke speed is desirable to accommodate long and short cutting strokes and provide consistent tissues.

3,785,235

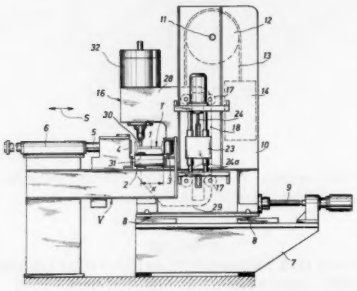
PUNCHING OR SHEARING TRAIN

Werner Peddinghaus, Sprockhovel, and Ludwig Regenbrecht, Hasslinghauser Str. 129, Gevelsberg, both of Germany, assignors to said Ludwig Regenbrecht, by said Werner Peddinghaus

Filed Sept. 24, 1971, Ser. No. 183,509
Claims priority, application Germany, Sept. 25, 1970, P 20 47 215.5
Int. Cl. B26d *5/12*
U.S. Cl. 83—557 **11 Claims**

An apparatus for punching or shearing work members by tool elements which are supported in a holder, with one of the tool elements movable toward and away from the other. The

holder is supported in a frame in which a work member is guided between the tool elements. The holder is resiliently supported in the frame so that during a work operation the actuated tool element will first engage the work member and



then the holder will move to bring the other tool element into engagement with the work member and the work operation is then completed by continuing the actuation of the actuated tool element.

3,785,236

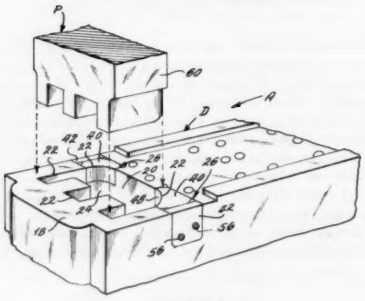
IMPACT DIE AND CARBIDE INSERT THEREFOR

Francis C. Peterson, Affton, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed May 30, 1972, Ser. No. 258,010

Int. Cl. B26f *1/14*, *1/46*

U.S. Cl. 83—685 **11 Claims**



A punch and die set for blanking or otherwise shearing pieces with curved edges from flat stock has carbide inserts on the punch and die thereof. The inserts are mechanically clamped in position and cut the rounded corners as the punch descends toward the die. Those corners are disposed so that the curved surfaces thereof merge into existing straight edges on the flat stock. The greatest wear occurs at these locations on existing punches and dies and the presence of carbide inserts at these locations greatly reduces wear and thereby extends the life of the entire punch and die set.

3,785,237

HARPSICHORD MECHANISM

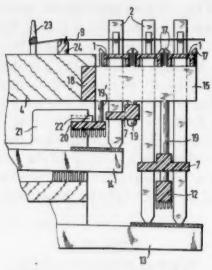
Rainer Schutze, Muhltalstrasse 128, Heidelberg, Germany

Filed Feb. 28, 1972, Ser. No. 229,838

Claims priority, application Germany, Apr. 15, 1971, P 21 18 322.2

Int. Cl. G10c *1/06*

U.S. Cl. 84—258 **12 Claims**



A mounting for vertically adjustably supporting the keyboard and jack guide means of a harpsichord on its wrest plank. The mounting comprises supports affixed to the plank and supporting the keyboard and jack guide means to form them into an operational unit with the plank.

3,785,238

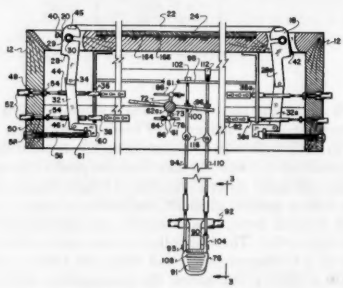
TONE CHANGING AND TONE MARKING APPARATUS FOR GUITARS

Willard L. Wheeler, 2251 N. Watts, Portland, Oreg.

Filed June 22, 1972, Ser. No. 265,293

Int. Cl. G10d *3/14*

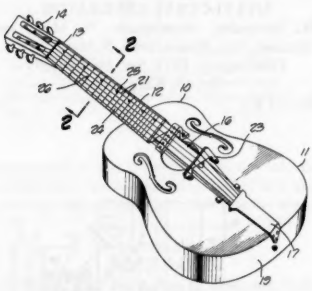
U.S. Cl. 84—312 **10 Claims**



Apparatus for selectively loosening and tightening the strings of a guitar while the guitar is being played to change the tone of the strings and thereby produce different chord combinations. A series of tone changers is mounted adjacent each end of a bank of guitar strings, each tone changer engaging a respective guitar string for selectively tightening or loosening it. The tone changers are selectively actuated by pedals or knee levers, or a combination of both, through a series of tension members and rotatable axle cranks. Each pedal comprises a primary lever coupled with one or more tone changers for causing single or multiple string tension adjustments, and a secondary lever mounted on the primary lever which can be selectively actuated simultaneously with the primary lever for causing additional string tension adjustments different from those caused by actuation of the primary lever alone. Some of the pedals are mounted to rotate only about a

horizontal axis, while others are universally mounted for rotation about both a horizontal and a vertical axis. Such universally mounted pedals are capable of actuation in four different modes for producing four different tone adjustment combinations. The knee lever system comprises a set of six knee levers for each knee, two of the levers being arranged horizontally with their free ends adjacent to one another, two other levers depending vertically from mounting points adjacent the journaled ends of the aforementioned pair of horizontal levers, and a third pair of horizontal levers located in a vertical plane inboard of the other four levers. The rotatable axles by which the various pedals and knee levers are coupled with their respective tone changers are mounted transversely to and beneath the bank of guitar strings, and each includes a plurality of upper and lower cranks protruding therefrom. The cranks are threaded into upper and lower rows of sockets in each axle, and can be easily removed and relocated if it is desired to alter the guitar for different tone changing combinations. Each individual tone changer is constructed of three arms pivotally connected end to end, the middle arm being engaged by a pair of tension members actuated by cranks on the rotatable axles. One of the tension members causes the tone changer to loosen its respective string and the other causes tightening of the string when pulled. The guitar also includes a tone marking panel beneath the guitar strings which is magnetically mounted to the guitar sounding board so that it may be easily detached and replaced.

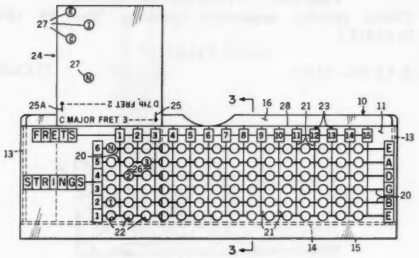
3,785,239
FRET BOARD FOR GUITAR
Walter E. Smith, P.O. Box A, Payette, Idaho
Continuation-in-part of Ser. No. 202,371, Nov. 26, 1971, Pat. No. 3,739,072. This application Mar. 23, 1973, Ser. No. 344,259
Int. Cl. G10d *3/06*
U.S. Cl. 84—314 **6 Claims**



An acoustic guitar to be played with a slide bar aginst the strings in the manner of a Hawaiian guitar has a fret board carrying markings for the actual fret locations together with additional visual indicators for determining proper positions of the steel bar on the strings to produce desired chords. The string-contacting slide bar is provided with a retainer loop to encircle the guitar neck to facilitate manual positioning of the slide bar with respect to the tensioned strings.

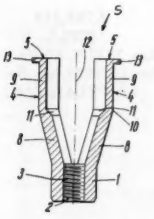
3,785,240
CHORD-TEACHING DEVICE FOR A STRINGED INSTRUMENT
Elgie E. Hill, Jost St., Bourbon, Mo.
Filed May 14, 1973, Ser. No. 360,089
Int. Cl. G10b *15/00*
U.S. Cl. 84—485 **7 Claims**

A device for teaching chords for a stringed instrument including a stringboard having strings and frets. The device includes an elongate box having a front stringboard wall. A plurality of parallel rows extend longitudinally on the front stringboard wall, the rows representing the strings of the instrument. A plurality of parallel rows extend transversely of the string rows and represent frets of the instrument. A plurality of apertures are provided in regularly spaced, longitudinal alignment along each string row, and in regularly spaced, transverse alignment relative to the string rows. The elongate box further



includes a card-supporting wall behind and spaced from the front stringboard wall to provide a slot behind the apertures. A chord card fits in the slot. This card includes a designation of a chord and a fret, an index for alignment with a fret row, and a designation of fingers located for alignment with appropriate apertures when the index is aligned with a fret row to indicate visually through the apertures the finger placement on the strings of the instrument.

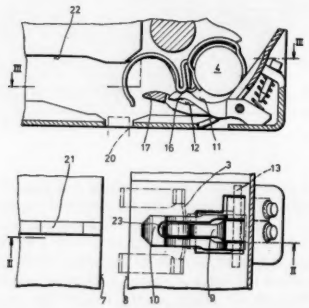
3,785,241
EXPANSION ANCHOR
Artur Fischer, Altheimer Str. 219, Tumlingen, Germany
Filed Dec. 3, 1971, Ser. No. 204,512
Claims priority, application Germany, Dec. 8, 1970, P 20 60 241.9
Int. Cl. F16b *13/04*
U.S. Cl. 85—71 **6 Claims**



An expansion anchor sleeve has a leading portion and a circumferential wall which is circumferentially complete at the leading portion but subdivided into a plurality of longitudinal webs rearwardly of the leading portion. The webs each have two axially adjacent sections the first one of which extends rearwardly from the leading portion and has a greater radial thickness and the second one of which extends rearwardly from the first section and has a lesser radial thickness. At the juncture between the two sections of each web a buckling line is provided and the first portion extends radially outwardly from the longitudinal axis of the sleeve at an acute angle

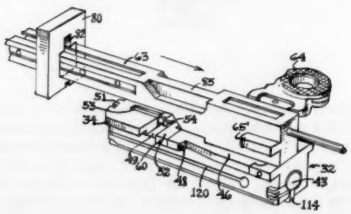
thereto, whereas the second portion extends in substantial parallelism with the longitudinal axis. A screw or similar means is provided for subjecting the sleeve to axial tensile forces to thereby effect radial outward buckling of the two sections of each web with reference to one another.

3,785,242
BELT FEEDER FOR AUTOMATIC FIREARMS
Rolf Hartmann, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed Mar. 17, 1972, Ser. No. 235,542
Claims priority, application Germany, Mar. 19, 1971, P 21 13 319.7
Int. Cl. F41d 9/02
U.S. Cl. 89—33 CA **23 Claims**



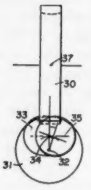
A belt feeder arrangement for automatic firearms with special spring and cam arrangements to prevent the jamming of the belt member in the ejector slot during changes in ammunition belts. Two spring biased pivotal lever members are mounted adjacent one another to engage the belt member and hold it up out of the ejector slot as it passes thereby. One lever is longer than the other so the levers engage the belt member in series. Alternative embodiments include leaf spring members in place of the pivotal lever members. Also, spacer members can be arranged at the mounting of the levers for adjusting to different size ammunition and belt members.

3,785,243
RIFLE
Nicolaos C. Christakos, 2832 N. Austin Ave., Chicago, Ill.
Filed Jan. 19, 1973, Ser. No. 325,089
Int. Cl. F41d 11/02
U.S. Cl. 89—149 **8 Claims**



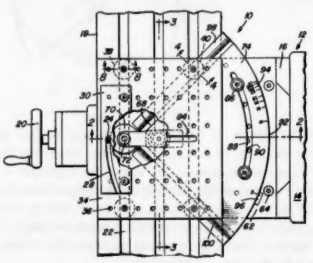
A rifle of the type which exploits pressure of the exploding gases for cocking the same, with the rifle operating in a semi or fully automatic state and including cooperating safety features which permit firing only upon correctly positioned structural parts.

3,785,244
METHOD OF AND MEANS FOR GENERATING GEAR TEETH
Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y.
Filed June 5, 1972, Ser. No. 259,737
Int. Cl. B23f 11/00
U.S. Cl. 90—4 **14 Claims**



The invention relates to the generation of tooth surfaces on wormgears, especially wormgears mating with large worms, crowned teeth of gear-coupling hubs, crowned teeth in general, and others. The tool used rotates in timed relation with the work-spindle. It may be a hob with a single thread or with a smaller number of threads than the worm of a wormgear pair. Standard hobs may be used to cut wormgears rather than a hob that directly represents the mating worm.

3,785,245
MULTI-CURVE GENERATOR
George W. Streander, Alamogordo, N. Mex., assignor to Design Systems, Inc., Alamogordo, N. Mex.
Filed Sept. 3, 1971, Ser. No. 177,699
Int. Cl. B23q 1/16
U.S. Cl. 90—11 R **9 Claims**



A cutting tool automatically traces a path of variable curvature on a workpiece to which movement is imparted. The motion of the workpiece relative to the tool is controlled by a pair of fixedly spaced pivots with respect to which the workpiece is slidably and pivotally constrained. The pivots lie on a circular arc of selected radius with respect to which the cutting tool is maintained in adjusted radially spaced relation.

3,785,246

RECIPROCATING CUTTING METHOD AND APPARATUS

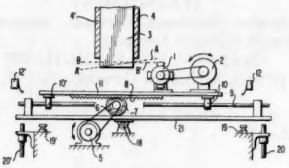
Tadao Ohno; Namio Shimose, and Shunzi Konomi, all of Minami Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1971, Ser. No. 213,148

Claims priority, application Japan, Dec. 28, 1970, 45/120334

Int. Cl. B23c *3/12, 5/00*

U.S. Cl. 90—11 C 3 Claims



Edge cutting of a work piece is achieved by a rotary cutter which rotates in a first direction as it moves linearly across the edge of the work piece and then rotates in an opposite direction as it reverses its movement to cut off any uncut portion of the projecting edge.

3,785,247

RECIPROCATING CUTTING MACHINE

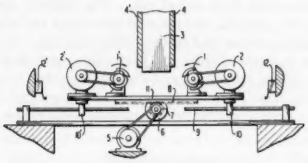
Tadao Ohno; Namio Shimose, and Shunzi Konomi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,622

Claims priority, application Japan, Dec. 29, 1970, 45/133145

Int. Cl. B23c *3/12*

U.S. Cl. 90—15 2 Claims



A cutting machine has the edges of two rotary side cutters rotating reversely to each other disposed at both sides of article to be cut by reciprocating cutters across the work piece.

3,785,248

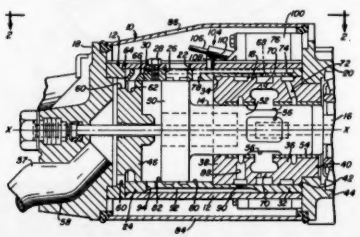
ROCK DRILL

Edward A. Bailey, RFD No. 2, Box 37, Newport, N.H.

Filed Nov. 23, 1970, Ser. No. 92,028

Int. Cl. F01b *25/00*; F01l *21/02*

U.S. Cl. 91—6 5 Claims



A rock drill and more particularly an independent rotation rock drill assembly having an improved method and apparatus for initiating reciprocable movement of the piston thereof.

3,785,249

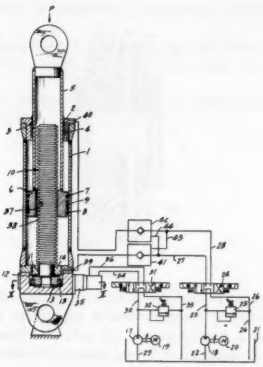
POWER TRANSMISSION SYSTEM

Jozsef Piroska, Kallangsvagen 6, Lidingo, Sweden

Continuation-in-part of Ser. No. 5,204, Jan. 23, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,863

Int. Cl. F15b *15/26*

U.S. Cl. 91—41 10 Claims



A power transmission system includes a linear fluid actuator having a cylinder and a piston, a screw rotatably mounted in the cylinder in an axially fixed position and having a threaded connection with the piston wherein there is some play between the threads, and means arranged to rotate the screw in either direction only when the mechanical load on the piston has counterbalance by corresponding force derived from fluid pressure for movement in both directions.

3,785,250

PISTON-TYPE MACHINE

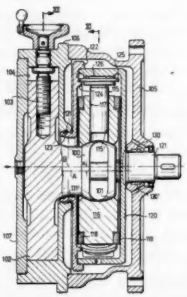
Anton Steiger, Illnau, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Sept. 22, 1971, Ser. No. 182,708

Claims priority, application Switzerland, July 7, 1971, 10030/71

Int. Cl. F01b *1/00*

U.S. Cl. 92—72 3 Claims



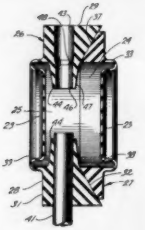
The pistons are reciprocally mounted within cylinders which are disposed to rotate about a given axis perpendicularly disposed to the longitudinal axes of the cylinders. In addition, an annular support surface or ring surrounds the piston to rotate about an axis parallel to and eccentrically spaced from the axis of rotation of the cylinders. This annular support surface includes flat sliding surfaces on which each piston can slide during rotation of the cylinders and support surface.

3,785,251

SEALING COMPOSITION FOR PNEUMATIC ACTUATOR

Walter Griffin Paige, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 13, 1971, Ser. No. 143,144
Int. Cl. F01b *16/00*
U.S. Cl. 92—98 R 5 Claims



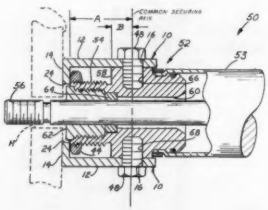
An improved pneumatic actuator for recording heads adjacent a magnetic memory disk is described. In a preferred embodiment a pair of heads are actuated toward a pair of disks by a single actuator having opposed flexible diaphragms. The diaphragms are each integral with one part of a two piece air chamber where the two elastomeric pieces are sealed together by a conical sealing surface. Air pressure within the chamber wedges the conical seal into tight engagement. A pair of rigid walled air tubes enter through the sides of the one of the pieces forming the air chamber. A flexible elastic sleeve protrudes into the chamber around each rigid walled tube and has an inside diameter smaller than the outside diameter of the tube for gripping the tube and holding it in position and so that air pressure within the chamber seals the sleeve against the tube.

3,785,252

FLUID MOTOR PRESSURE CYLINDER MOUNTING APPARATUS

Russell J. Cornair, Akron, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,169
Int. Cl. F01b *29/00*
U.S. Cl. 92—161 17 Claims



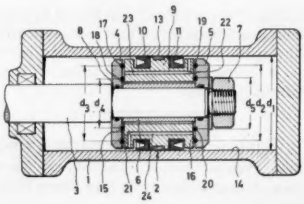
An apparatus for selectively mounting fluid motor pressure cylinders on supporting surfaces in at least three different ways. The apparatus comprises at least two novel mounting brackets each of which includes a support flange and a leg flange extending at right angles from one edge of the support flange. Four brackets are secured in pairs to both ends of the cylinder and extend laterally of the cylinder for the foot mounting position. A pair of brackets is secured along a common axis at one end of the cylinder and also extends laterally of the cylinder for the pivot mounting position. The head flange mounting position allows the cylinders to be mounted in a cantilevered position from one end thereof and utilizes two brackets secured along a common axis at one end of the cylinder and extending longitudinally of the cylinder. In the latter position, an end portion of the cylinder is received and secured in recesses formed in the leg flanges whereby two cylinder support points are provided and spaced a predetermined distance apart.

3,785,253

RADIALLY YIELDING CYLINDER AND PISTON ARRANGEMENT

Hartmut Sandau, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 14, 1972, Ser. No. 217,920
Claims priority, application Germany, Jan. 27, 1971, P 21 03 646.4
Int. Cl. F16j *1/00, 9/00*
U.S. Cl. 92—181 5 Claims



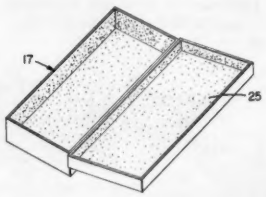
A piston structure, located in a cylinder to which pressure fluid can be supplied, includes a piston rod with a rigidly secured support piston on which a sealing piston, sliding in the cylinder, is mounted with radial play. The support piston is spaced from the cylinder surface and can move radially relative to the sealing piston and to the cylinder surface when the piston rod is radially displaced. Preferably, pressure areas balance the sealing piston in axial direction so that friction is reduced during relative radial movement between the support piston and the sealing piston due to radial displacement of the piston rod.

3,785,254

INSULATED CONTAINERS OR THE LIKE

Robert H. Mann, 7034 Via Pradera, San Jose, Calif.

Filed May 26, 1971, Ser. No. 146,931
Int. Cl. B31b *49/02*
U.S. Cl. 93—36.01 1 Claim

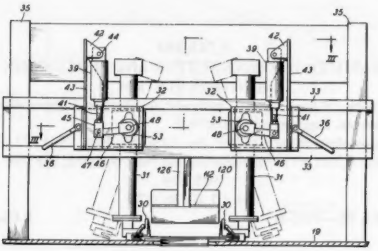


A method is disclosed for making an insulated container by spraying a cardboard surface with a resinous foam material having a wet-out time of no greater than about three seconds and a cure time of no greater than about thirty seconds. The cardboard surface may be formed into a container either before or after spraying, with the spraying forming an insulating coating on the internal surfaces of the container.

3,785,255
HOT AIR SEALING APPARATUS FOR CARTONS

Richard C. Talbot; Edward Rose, both of Skokie, and Robert A. Roth, Chicago, all of Ill., assignors to Peters Machinery Company, Chicago, Ill.

Filed Nov. 10, 1972, Ser. No. 305,353
Int. Cl. B31b *3/60, 1/44, 1/64*
U.S. Cl. 93—41 **19 Claims**

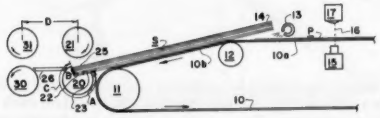


Apparatus for forming and heat sealing a flat cardboard carton blank, die cut to proper size and shape and crease scored to provide the proper lines at which forming is to take place. The inside of the blank is coated with a non-toxic coating of thermoplastic material which will bond to cardboard when liquified by heat and put under pressure. Hot air guns in the form of vertically extending cylinders are pivotally mounted at each side of the forming run of the blank for movement toward and from the forming run. Fluid pressure cylinders and pistons are provided to move the hot air guns away from the forming run when a blank is not present at the forming run, when the blanks become jammed in the apparatus and when the apparatus is turned off. The hot air guns support nozzle assemblies at their lower ends in the form of ducts extending over the end panels of the blanks and having auxiliary ducts extending upwardly along the sealing tabs of the blanks. These ducts have nozzle openings therein for supplying hot air to the insides of the end panels to liquify the thermoplastic coating and to spot heat the sealing tabs. When the end panels and sealing tabs are heated, a forming block moves into the center of the blank and forms the carton to form and applies pressure to the sealing tabs and end panels to seal the blank to carton form.

3,785,256
PANEL COUNTING, COLLECTING AND GATING APPARATUS

Willem Andre Nikkel, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,875
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 C **10 Claims**

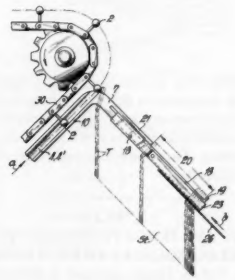


A continuously conveyed series of uniformly dimensioned panels of thin sheet material are counted and stacked from the bottom against an abutment edge of a stationary but rotatable cam plate. When a predetermined number of panels is collected in the stack, the cam plate is rotated to lift the stack into a rotating roll nip for conveyance to a second roll nip. Removal of the stack from the proximity of the collecting cam plate is completed by the second roll nip after the collecting cam has resumed a stationary, collecting position.

3,785,257
APPARATUS FOR FORMING STACKS OF FLAT, APERTURED WORKPIECES

Konrad Tetenborg, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany

Filed Sept. 5, 1972, Ser. No. 286,324
Claims priority, application Germany, Sept. 8, 1971, P 21 44 990.1
Int. Cl. B65h *29/40;* **B31b** *1/98;* **B65h** *31/30*
U.S. Cl. 93—93 HT **2 Claims**



The workpieces are successively threaded onto a mandrel and are removed from the same as a stack. The mandrel is carried by and freely suspended from stack flights, which are mounted on a revolving flight conveyor and engage bearing surfaces of the mandrel from below. The pitch of the flights on the flight conveyor is selected so that workpieces can be threaded on the receiving end of the mandrel between any two successive flights. The delivery end of the mandrel is angled downwardly behind the position where the flights of the flight conveyor leave the bearing surface of the mandrel. The downwardly angled portion of the mandrel is provided at its end with a stop bar, which is slidably mounted and can be fixed in position and has an upwardly directed stop nose, which defines with the delivery end of the mandrel a step in a length which can be adjusted as desired. A guide rail extending in the longitudinal direction of the stop bar is pivoted to the stop bar at that end of the guide rail which is remote from the stop nose, for an up and down movement. The stop nose protrudes over the guide rail when the same is in its lower end position. The guide rail in its upper end position extends obliquely to the stop bar and with its free end protrudes over the stop nose.

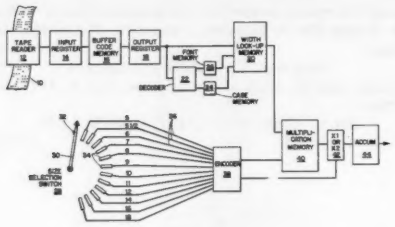
3,785,258
TYPE COMPOSING APPARATUS HAVING NOVEL CHARACTER WIDTH DERIVATION STRUCTURE

Edward A. Aron, Needham, Mass., and Louis E. Griffith, Hampstead, N.H., assignors to Graphic Systems, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 878,368, Nov. 20, 1969, and a continuation-in-part of Ser. No. 43,763, June 5, 1970. This application June 26, 1972, Ser. No. 266,473
Int. Cl. B41b *15/08*
U.S. Cl. 95—4.5 **9 Claims**

Type composing apparatus is disclosed as including means for representing its binary code a series of characters, means for generating a relative width value for each character, means for representing a succession of point size factors, one for each character, and means for multiplying a relative width

value assigned to each character by a point size factor for that character. The means for multiplying associated pairs of relative width values and point size factors is disclosed as comprising a memory having stored therein products of relative width values and point size factors. Means are shown for addressing and extracting from the memory an adjusted width value and



point size factor. The means for generating a relative width value for each character is depicted as including a read-only integrated circuit memory having permanently stored therein at mutually exclusive addresses a relative width value for each of the characters. One embodiment of a photocomposing machine is disclosed.

3,785,259

DAYLIGHT AND FLASH PHOTOGRAPHY CHANGE-OVER ELECTRICALLY-OPERATED SHUTTER

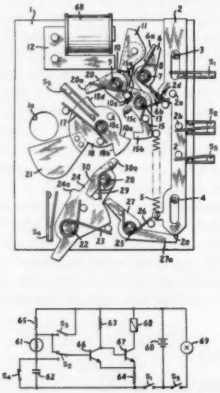
Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1972, Ser. No. 317,710

Claims priority, application Japan, Dec. 21, 1971, 46-103815

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **8 Claims**



An electrically-operated shutter provided with a change-over device or arrangement for effecting daylight and flash photography automatically shifting from a daylight mode to a flash photography mode as a function of the detected brightness level of the field being photographed. One embodiment provides for manually presetting the camera for flash photography which is then automatically carried out with an automatic change-over from a daylight photography mode to a flash photography mode. When carrying out daylight photography the power source energy is used in control and in energizing an electromagnet that controls the exposure termination under control of a delay circuit. When taking flash exposure the delay circuit is not employed and a fixed exposure time is used. The power supply is then used to energize the flashbulb and the accuracy of the shutter timing is unaffected as might be the case if the power source were energizing both the flashbulb and driving or energizing the shutter. The same shutter-operating elements are used in both modes of operation and the change-over arrangement eliminates the use of the delay circuit when the brightness level is below a predetermined level so that flash photography becomes necessary.

3,785,260

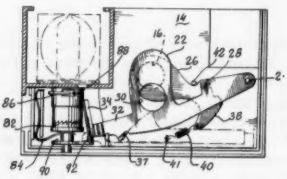
HAMMER-DRIVEN SHUTTER AND PERCUSSION IGNITION SYSTEM

Ib Penick, Wheeling, Ill., assignor to Simpro Corporation of America, Englewood Cliffs, N.Y.

Continuation-in-part of Ser. No. 229,355, Feb. 25, 1972, Pat. No. 3,747,492. This application Nov. 9, 1972, Ser. No. 305,179

Int. Cl. G03b *9/70*

U.S. Cl. 95—11.5 R **7 Claims**



A hammer-driven shutter and flashlamp igniting system for cameras adapted for use with percussion-ignitable flashlamps. The shutter system consists of two overlapping shutter-blades which co-act to open the camera exposure aperture radially outwardly from the center, and co-act to close the camera exposure radially inwardly toward the center. A flashlamp firing pin is integral with one of said shutter-blades, and it is movable into and out of percussion igniting position in synchronization with the operation of said shutterblade.

3,785,261

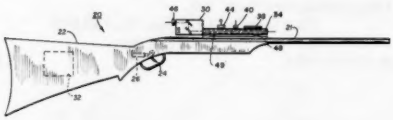
EVENT RECORDER

Robert A. Ganteaume, 676 Rutgers Pl., Paramus, N.J.

Filed Sept. 5, 1972, Ser. No. 286,023

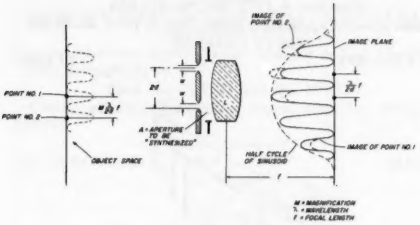
Int. Cl. G03b *29/00*

U.S. Cl. 95—12 **5 Claims**



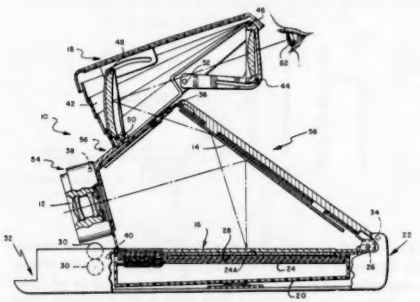
This invention pertains to apparatus adapted to make an immediate record as by a photograph of a theoretical hit such as in hunting wild game. There is shown both a mechanical and an electrically actuated means for causing this theoretical hit to be exposed on the film of a camera which is carried by and actuated with the pulling of the trigger of the gun. The distance, trajectory and windage factors are reflected in this photographic record. The hunter using the gun fires a blank cartridge rather than a real cartridge so that this photographic record indicates what results this hunter would have achieved had a real bullet been fired.

3,785,262
OPTICAL APERTURE SYNTHESIS
George W. Stroke, 23 Southgate Rd., Setauket, N.Y.
Filed Dec. 9, 1969, Ser. No. 883,534
Int. Cl. G03b 35/02, 35/08
U.S. Cl. 95—18 16 Claims



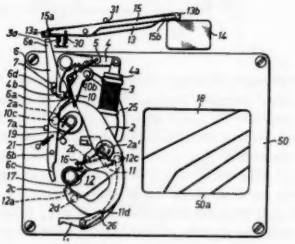
There is disclosed a method and apparatus for synthesizing large-aperture optics by exposure of a single photographic plate either successively or simultaneously through small-aperture optics. The technique represents the extension of the "synthetic-aperture radio telescope" principle to the optical domain by the relatively simple photographic synthesis of a "-high-resolution" image in a single photograph, exposed either successively through sets of small "low-resolution" apertures sucessively placed to generate the spatial frequency components of the desired large aperture, or exposed simultaneously through a set of small "low-resolution" apertures having such optical characteristics and being so arranged as to generate the spatial frequency components of the desired large aperture.

3,785,263
CAMERA BELLOWS TO PREVENT DUST ENTERING THROUGH AN APERTURE THEREIN
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 18, 1972, Ser. No. 289,995
Int. Cl. G03b 17/04
U.S. Cl. 95—39 21 Claims



A thin-walled, opaque, flexible envelope for excluding light from the exposure chamber of a camera is described. It has a dielectric insert of high resistivity to prevent dust and other airborne particulate matter from entering the exposure chamber through a small open aperture in the envelope. The aperture permits communication between a viewfinder associated with the camera and a focusing screen situated within the exposure chamber.

3,785,264
SWINGING-SECTOR CAMERA SHUTTER WITH IMPROVED WARNING INDICATOR
Peter Loseries, Diez, Germany, and Toshio Hayashi, Osaka, Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan and Ernst Leitz GmbH, Wetzler, Germany, part interest to each
Filed Mar. 30, 1973, Ser. No. 346,576
Claims priority, application Japan, Apr. 11, 1972, 47/36249
Int. Cl. G03b 9/36
U.S. Cl. 95—55 4 Claims



A swinging-sector camera shutter having a plurality of sectors; each sector has a plurality of blades including a primary blade and a plurality of covering blades. The primary blades execute a combined rotary-sliding motion while the covering blades execute a rotary movement about a common pivot point. The shutter has a control lever which, when the shutter is cocked, seizes and moves successively the operating crank of the first rotary slide and the operating crank of the second rotary slide. The second slide is held in the initial position by a pawl under the tension of a spring which disengages this pawl and which, with its other end, is hingedly connected to the control lever and is tensioned at the beginning of the operation of this lever. The shutter has a holding magnet to which voltage is applied at least when the control lever starts operation and this magnet retains the pawl in the locking position against the force of the spring until the magnet is deenergized by a timer.

The shutter has a warning indicator comprising:

a. a warning lever which is longitudinally displaceable from a rest position into a functional position on a fixed pin by means of a slotted hole, and which is furthermore tiltable about this pin, one end of which is held, in the rest position, by means of spring force at a fixed abutment outside of the path of the operating crank of the first rotary slide;

b. the warning lever has a first pin which, in the rest position, is in the path of the disengaging armature locking lever for the second rotary slide and, when the armature drops off when the magnet is deenergized, is seized by this locking lever so that the one end of the warning lever is tilted, against spring force, into the path of the operating crank of the first rotary slide and is shifted thereby to such an extent that the armature locking lever slides off the first pin and releases the second rotary slide with a time delay with respect to the first rotary slide, for accomplishing its operating cycle; and

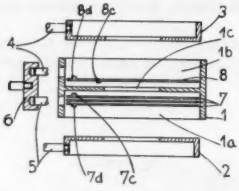
c. the warning lever has a second pin which, when the warning lever is not tilted by the armature locking lever, is in the operational path of the control lever and is longitudinally shifted by the latter so that the first pin is no longer in the path of the dropping off armature locking lever.

3,785,265

IRIS DIAPHRAGM

Jacques Lardeau, Rosny-sous-Bois, France, assignor to Societe d'Optique, Precision, Electronique et Mecanique-Sopelem, Paris, France

Filed May 25, 1973, Ser. No. 363,866
Claims priority, application France, July 6, 1972, 72.24426
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R 10 Claims



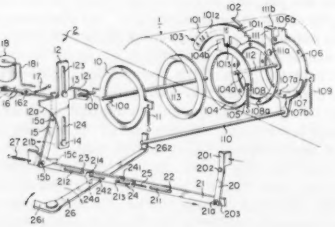
An iris diaphragm includes shutter blades moved by a conventional control member during a first phase of adjustment to reduce the aperture to a size at which diffraction effects are still unimportant. In a second phase of adjustment the shutter blades are stationary and a transparent support member is moved to introduce increasingly dense portions of a graduated filter into the optical path. Light control over a range of 1:1,000,000 may thus be obtained. There may follow a third phase in which the shutter blades again move to reduce the aperture to zero. The blades and the filter support may be placed on opposite sides of a permanent stop and actuated by respective control members coupled to a common setting ring. Alternatively the blades and filter support may be on the same side of the stop and actuated by a common control member. The filter support may be introduced into the optical path only after the first phase has ended, or a transparent portion thereof may be always in the optical path, the filter-carrying portion being brought into action only during the second phase.

3,785,266

SINGLE LENS REFLEX CAMERA CAPABLE OF OPEN APERTURE PHOTOMETRY AND APERTURE STOP PHOTOMETRY

Yoshiaki Watanabe, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,410
Claims priority, application Japan, Nov. 5, 1970, 45/97330
Int. Cl. G03b 9/07
U.S. Cl. 95—64 R 7 Claims



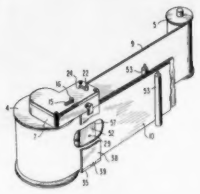
A single lens reflex camera, on which can be mounted both types of interchangeable lenses for open aperture and aperture stop photometry, is provided with a mechanism. This mechanism enables to operate open aperture photometry or aperture stop photometry selectively, even when an interchangeable lens for open aperture photometry is mounted on a camera.

3,785,267

PHOTOGRAPHIC APPARATUS HAVING BUILT-IN PROCESSOR

Yoshio Asano, Nicinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1972, Ser. No. 312,006
Claims priority, application Japan, Dec. 3, 1971, 46-98200
Int. Cl. G03d 9/00
U.S. Cl. 95—89 L 7 Claims



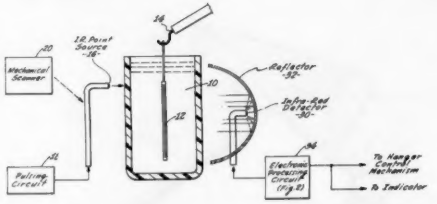
A developer solution supplying device is made independently of the camera body and integrally fixed to a spool for feeding out a positive image forming paper. The unit of the solution supplier and the posi-paper spool is demountably attached to the camera body. The developer solution supplying device is operable from outside the camera by operating two manual operating members. The posi-paper is provided with a number of solution containers for the respective images which are filled one by one with the developer solution as the paper advances by pulling the paper with the negative film out of the camera.

3,785,268

SCANNING TYPE PHOTOGRAPHIC FILM DEVELOPING SYSTEM AND APPARATUS

David P. Gregg, 1936 Kelton Ave., Los Angeles, and Charles K. Pooley, Santa Monica, both of Calif., assignors to said Gregg, by said Pooley

Continuation of Ser. No. 214,924, Jan. 3, 1972, abandoned.
This application Jan. 19, 1973, Ser. No. 325,201
Int. Cl. G03d 3/10
U.S. Cl. 95—89 R 6 Claims



A system and apparatus is provided for developing photographic film such as X-ray film, for example, in a dental office, or in any other establishment. The system is capable of causing the film to be developed with any desired density, and within known limitations, regardless of whether the film has been over-exposed or under-exposed, and regardless of the temperature of the developing bath, and the age of the developing solution. The apparatus incorporates a control system which responds to the scanning of the exposed film in a developing solution by a radiant energy beam to which the particular film is relatively insensitive, and which causes the

developing process to be terminated when a desired density is achieved. The system of the invention has a feature in that the very clear and very opaque areas, and other areas of no interest, are eliminated from the processing, and the desired density is established by processing the film between such minimums and maximums.

3,785,269

AUTOMATIC FILM PROCESSOR HAVING SWITCHABLE TRANSPORT PATH

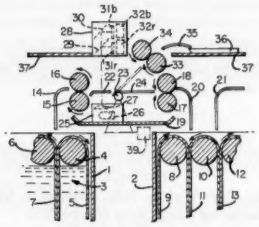
Masami Morioka, Kyoto, Japan, assignor to Log Electronics Inc., Springfield, Va.

Filed May 7, 1973, Ser. No. 357,739

Claims priority, application Japan, Oct. 31, 1972, 47-108499

Int. Cl. G03d *3/12*

U.S. Cl. 95—94 R **10 Claims**



An automatic film processor having a transport system for normally transporting sheets of film to be processed through a series of treatment stations in predetermined sequence, includes a movable guide element for altering the transport path to vary the sequence of processing steps for a selected sheet of film. The selected sheet can be provided with a distinctively colored leader, the presence of which is detected by a color-sensitive control system operative to alter the transport path, e.g., to divert the selected sheet of film away from the drier in the film processor and deliver it in wet condition to a catch tray.

3,785,270

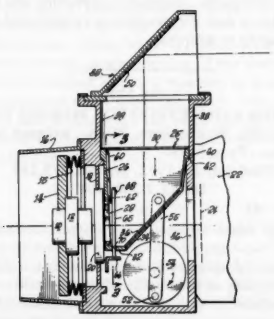
REFLEX CAMERA VIEW FINDER

Otto M. Schiff, Laguna Beach, and Vitolds Rikis, Costa Mesa, both of Calif., assignors to Coleman Systems, Irvine, Calif.

Filed Aug. 9, 1972, Ser. No. 278,955

Int. Cl. G03b *13/02*

U.S. Cl. 95—11 V **8 Claims**



A ground glass is the upper wall of a view finder chamber that is movable bodily between a lower view finding position and an upper picture taking position. The chamber has an opening to receive the light beam from the camera lens and a mirror fixedly mounted in the chamber reflects the light beam onto the upper ground glass of the chamber. The image is erected by a second fixed mirror outside the chamber. A power-actuated crank moves the chamber and a light shield in the chamber automatically covers the chamber opening at the upper picture taking position of the chamber.

3,785,271

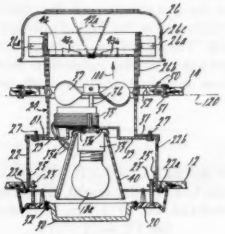
NEW LOW PROFILE VENTILATOR APPARATUS MEANS

Edward Joy, Owosso, Mich., assignor to Ventrola Manufacturing Company, Oswosso, Mich.

Filed Feb. 7, 1972, Ser. No. 224,052

Int. Cl. F24f *7/02*

U.S. Cl. 98—40 DL **3 Claims**



A low profile ventilator apparatus means for use in mobile homes, modular homes, and the like which includes a structural combination of lighting means or a radiant heat lamp cooperatively associated with a bathroom fan such as to permit straight through or vertical discharge of air and being uniquely constructed to fit ceiling to roof depths ranging from approximately 4 to 13 inches.

3,785,272

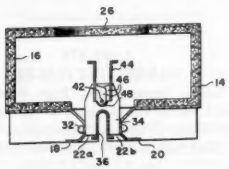
AIR DIFFUSER FIRE DAMPER

John C. McNabney, and Gerhard J. Hantke, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Mar. 24, 1972, Ser. No. 237,786

Int. Cl. E05f *15/20*; **F24f** *13/06*

U.S. Cl. 98—40 D **4 Claims**



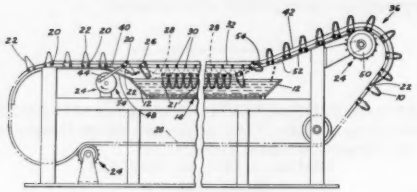
A fire damper apparatus for use with a ceiling mounted air distributor or diffuser. The fire damper is held in the inoperative position against the urging of torsion springs by fusible pins. Melting of the pins allows the damper to rotate into the operative position.

3,785,273

TACO SHELL MACHINE

Daniel T. Stickle, 310 E. 40th St., Lubbock, Tex.

Filed Feb. 1, 1972, Ser. No. 222,493
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **16 Claims**



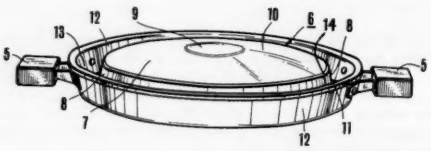
Tortillas are placed on a flexible, pliable, perforated web made of woven metal. A plunger folds over the tortilla, folding the tortilla and the metal web, and the combination wherein the tortilla is fried crisp in the folded position, thus forming it into a taco shell. Thereafter, the plunger with the taco shell thereon is unfolded from the metal web and the fat drained and shaken from the shell and the shell dropped from the plunger.

3,785,274

REVERSIBLE COOKING INSTRUMENT

Yuki Yamamoto, 1343 Ushita-machi, Hiroshima, Japan

Filed Oct. 20, 1971, Ser. No. 190,991
Int. Cl. A47j *37/10*
U.S. Cl. 99—425 **2 Claims**



A reversible cooking instrument comprising mainly a vessel and a brim of which edge having a downward projection, and said instrument, when reversed, comprising a crown-like body corresponding to said vessel and a brim of which edge having an upward projection, wherein a head of said body having a central plane portion surrounded with an outer sloping portion extending to and connecting with a peripheral wall of said body, said peripheral wall further connecting with said brim of which edge being projected upwards to form a circular groove in combination with said peripheral wall.

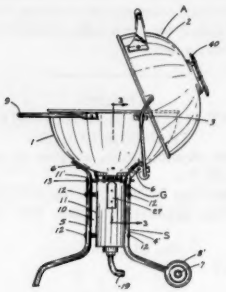
3,785,275

BARBECUE COOKER

Richard L. Keats, Sands Point, Port Wash., N.Y.; Harold Glaser, and Charles Leach, both of St. Louis County, Mo., assignors to Glaser Products Corporation, Neosho, Mo.

Filed July 26, 1971, Ser. No. 166,004
Int. Cl. A47j *37/07*
U.S. Cl. 99—446 **6 Claims**

A barbecue cooker, which may be adapted for gas operation, comprising a fire bowl, a gas burner provided in the lower portion of said fire bowl, there being an opening in the base of said fire bowl through which extends means for connecting said burner to a suitable source of gas. A grill is supported above said burner and constructed for inclination upwardly from its outer edges toward its center. An annular rib surrounds the fire bowl opening and an aperture is located



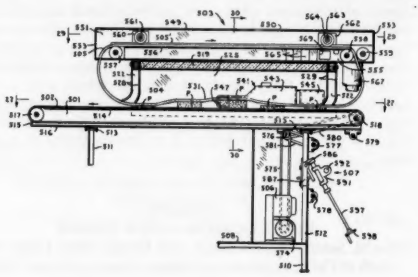
proximate said rib on the side thereof opposite said opening for communication with a receptacle mounted on said cooker downwardly of said aperture.

3,785,276

EQUIPMENT FOR CONDITIONING AND PACKAGING A PRODUCT

David A. Noor, Fort Wayne, Ind., assignor to Norr Engineering-Manufacturing Corp., Fort Wayne, Ind.

Division of Ser. No. 797,134, Feb. 6, 1969, Pat. No. 3,712,020.
This application Aug. 30, 1971, Ser. No. 175,858
Int. Cl. A23n *1/00*
U.S. Cl. 99—516 **7 Claims**



The invention is directed to a system whereby a product is sealed in a fusible plastic wrapper by shriveling and fusing portions of the latter and the product is conditioned or treated prior to packaging or wrapping.

3,785,277

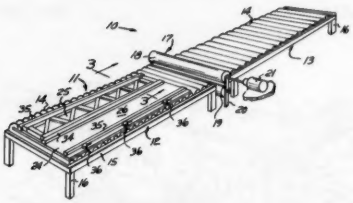
APPARATUS AND METHOD FOR MAKING TRUSSES

Jack N. Schmitt, Birmingham, Mich., assignor to Truswal Systems, Inc., Troy, Mich.

Filed July 26, 1972, Ser. No. 275,147
Int. Cl. B30b *3/04*
U.S. Cl. 100—41 **7 Claims**

Fabricating wood trusses with toothed connector plate joints upon a two-truss position support plate which is endwise slidably supported upon a roller table having a roller press arranged transversely of the middle of the table. Pre-cut chords and web members are arranged at one side of the table and are loaded upon one plate position, with connector plates loosely positioned with their teeth down over the abutted joints and then the support plate is slid through the roller press to the

other side of the table for press embedding the connector plate teeth into the members. Then the truss is turned upside down upon the second plate position and connector plates are arranged over the opposite faces of the joint, while simultaneously another truss is assembled upon the first plate position.



Then the plate is returned through the roller press wherein the completed truss is then removed from the second position and the cycle is repeated. Thus, all loading of truss chord and web members are on one side of the table and on opposite sides of the press and all unloading of completed trusses is at opposite sides of the table and at opposite sides of the press.

3,785,278

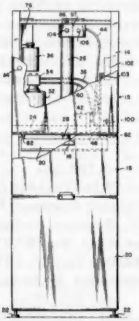
MACHINE FOR COMPACTING TRASH

Stephen Hopkins, Washington, D.C., assignor to Compackager Corporation, Washington, D.C.

Filed Apr. 29, 1971, Ser. No. 138,446

Int. Cl. B30b *15/16*

U.S. Cl. 100—51 **11 Claims**



This invention is a machine for compacting trash, following which the compacted trash is removed for disposal. The trash is compacted by a ram operating within a compression chamber containing a trash receptacle, which preferably comprises a sleeve into which trash is placed. A trash-receiving bag is pulled over the lower portion of the sleeve, the sleeve and bag being removed from the machine as a unit for emptying the compacted trash from the sleeve into the bag. The compacting ram is automatically retracted by a pressure-activated or time-activated ram returning device and is provided with a load limit shut-off member.

3,785,279

PREHEATING SYSTEM FOR PLYWOOD HOT PRESS MACHINE

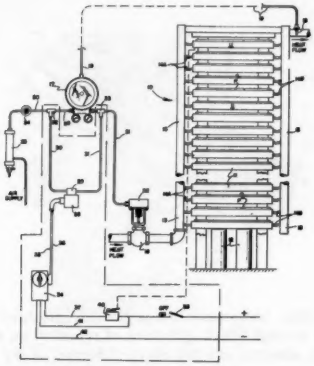
Julius G. Fails, 911 Fairview Dr., Springfield, Oreg.

Filed Mar. 10, 1971, Ser. No. 122,742

Int. Cl. B02c *11/08*; **B30b** *15/34*

U.S. Cl. 100—93 P **2 Claims**

A system for operation in conjunction with an existing temperature controlling system for a plywood press to momentarily "override" the latter system to permit applying a higher than normal temperature to the press platens to impart initial, rapid heating to the plywood panel thereon. The temperature controller system re-assumes control of the press temperature



after the momentary rise of the platen temperature. Accordingly, the time required to heat and cure a plywood panel is reduced with increased productivity of the plywood press being realized.

3,785,280

MOBILE APPLIANCE FOR THE TREATMENT OF DOMESTIC GARBAGE

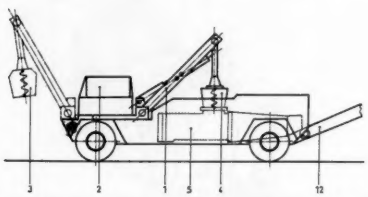
Gwenole Jean-Claude LeJeune, Port-Joinville, France, assignor to Societe d'Etudes, Fabrications, Installations et Manutention en abrige EFIM S.A., Ambergenville (Les Yvelines), France

Filed Mar. 16, 1972, Ser. No. 235,263

Claims priority, application France, Mar. 22, 1971, 7109972

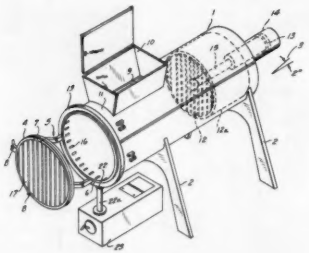
Int. Cl. B30b *9/06*

U.S. Cl. 100—100 **4 Claims**



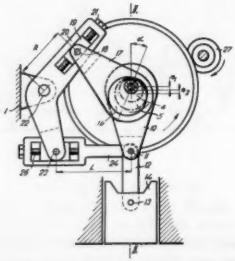
Mobile appliance for treating domestic garbage to obtain by compression, on one hand, an inert part, and on the other, a liquid, fermentable part, the appliance consisting of a motor-driven vehicle provided with a swivelling mechanical arm, fixed on a rotary turret, the arm comprising at its free end and at least two articulated jaws acting like pincers to grasp the loose garbage and discharge it into a compression chamber of a press carried by the vehicle, the chamber being provided with a plurality of radial orifices opening out into a common chamber for evacuating the liquid.

3,785,281
REFUSE COMPRESSOR
David R. Ligh, 193 Main St., Madison, N.J.
Division of Ser. No. 884,178, Dec. 11, 1969, abandoned. This application Mar. 10, 1972, Ser. No. 233,807
Int. Cl. B30b 9/06
U.S. Cl. 100—116 6 Claims



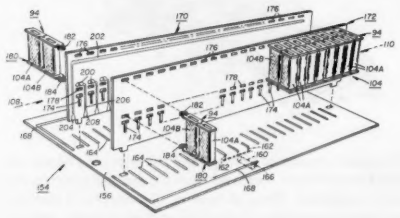
A refuse compressor has a housing provided with inlet means through which quantities of refuse to be compressed may be admitted into the interior chamber of the housing. A platen is received in this chamber for sliding forward movement towards one end wall of the chamber to thereby compress the refuse, and for return movement away from the end wall of the chamber. An operating arrangement is associated with the platen and serves to cause the latter to move forward at a first speed and under a first pressure, and to cause the platen to return to its starting position at a higher second speed but under a lower second pressure. Drain openings are provided in the region of a door of the housing, through which liquid expressed from the refuse may leave the housing.

3,785,282
MECHANICAL PRESS WITH TOGGLE LEVER CRANK DRIVE
Ivan Kamelander, Brno, Czechoslovakia, assignor to Zdarske strojirny a slevarny, narodni podnik, Zdar nad Sazavou, Czechoslovakia
Filed June 8, 1971, Ser. No. 150,982
Claims priority, application Czechoslovakia, June 10, 1970, 704061
Int. Cl. B30b 5/00
U.S. Cl. 100—257 8 Claims



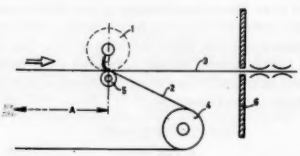
Drive mechanism for the slide of a mechanical press, especially a toggle lever crank press. In the slide driving mechanism means are provided comprising two eccentrics adjustable relative to one another for continuously changing the slide speed during its stroke, especially its slowing down close before the tool comes into contact with the stock to be worked.

3,785,283
TELEPRINTER ASSEMBLY
James F. Kearney, Oak Park, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Sept. 18, 1972, Ser. No. 290,192
Int. Cl. B41j 23/14; H02b 1/04; H05k 1/07
U.S. Cl. 101—93 C 3 Claims



Each of a plurality of self-restoring horizontally spaced apart print hammers selectively is driven lineally toward a printing position in response to movement of the armature of an electromagnet. The electromagnets are disposed in a pair of spaced apart banks, their armatures extending inwardly and providing a plurality of aligned working inner ends as agents for application of electromagnetic energy. A circuit card is physically secured and electrically connected to the coil assembly of each of the electromagnets of each bank and has a plurality of aligned apertures enabling passage and rocking movement of the corresponding armatures. The circuit cards are vertical and are disposed in horizontally extending parallelism, the working inner ends of said armatures being disposed therebetween. A circuit board is physically secured and electrically connected to said cards with which it is orthogonally disposed.

3,785,284
SCREEN PRINTING MACHINE
Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabant N.V., Boxmeer, Netherlands
Continuation-in-part of Ser. No. 887,977, Dec. 24, 1969, abandoned. This application May 16, 1972, Ser. No. 253,764
Claims priority, application Netherlands, Jan. 28, 1969, 6901386
Int. Cl. B41l 13/06; B65h 17/34
U.S. Cl. 101—118 3 Claims



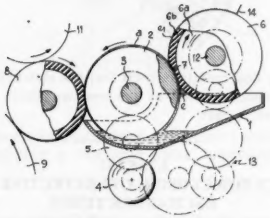
A screen printing machine comprising a plurality of cylindrical screens capable of printing a travelling web which is temporarily affixed to a supporting belt, said machine comprising means for discharging said web immediately beyond the last screen under an acute angle with said belt.

3,785,285

DAMPING DEVICE FOR ROTARY OFFSET PRESS

Louis Jean Chambon, Paris, France, assignor to Societe d'Etudes de Machines Specials S.A., Paris, France

Filed July 12, 1971, Ser. No. 161,545
Claims priority, application France, July 10, 1970, 7025901
Int. Cl. B41f 23/02
U.S. Cl. 101—148 4 Claims



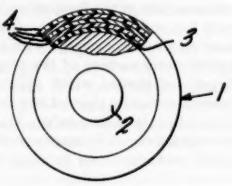
A damping device for a rotary offset printing machine comprising a trough of dampening fluid in which is partially immersed a transfer roll having a hard hydrophilic surface. A wiping roll having a flexible surface is pressed against the transfer roll. In order to prevent a build-up of sludge at the inlet to the zone of contact between the two rolls, the wiping roll is rotated very slowly at a speed between one hundreth to one tenth of the speed of the transfer roll, the sludge entrained by the wiping roll being collected by a scraper blade or other means so as to prevent it being recycled.

3,785,286

WIPING CYLINDER OF STEEL ENGRAVING PRINTING MACHINE AND METHOD OF MAKING IT

Gualtiero Giori, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 833,622, June 16, 1963, abandoned, which is a continuation-in-part of Ser. No. 462,355, June 8, 1965, abandoned. This application Aug. 26, 1971, Ser. No. 175,224
Claims priority, application Italy, June 18, 1964, 48397/64
Int. Cl. B41f 9/08
U.S. Cl. 101—155 6 Claims



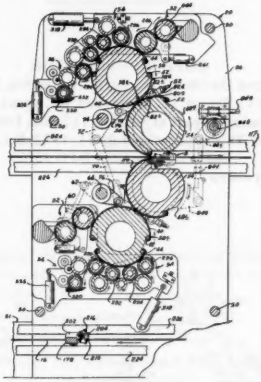
The wiping cylinder of a steel engraving printing machine is coated with a plurality of thin plastic layers over a rubber base layer. When the wiping cylinder is to be cleaned with an organic solvent, the plastic coatings are of a thermoplastic synthetic resin that is soluble in water but not in organic solvents, for example polyvinyl alcohol that is partially saponified and contains acetyl groups. When the wiping cylinder is to be cleaned by an aqueous solution, the coatings are of a synthetic resin such as polyvinyl chloride that is not soluble in water. The thin plastic layers are applied successively by means of a doctor blade assuring smoothness, uniformity and exact thickness of the layers, and each layer is hardened before the next is applied.

3,785,287

SHEET INTERRUPTER

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex.

Continuation-in-part of Ser. No. 737,521, June 17, 1968, Pat. No. 3,664,261. This application May 3, 1972, Ser. No. 249,944
Int. Cl. B41f 13/24
U.S. Cl. 101—247 5 Claims



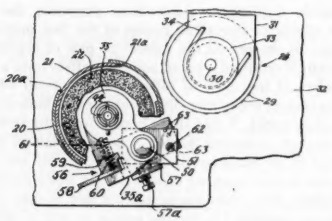
Sheet interrupter means for a sheet-fed printing press wherein upper and lower printing cylinders are supported by eccentric bearings permitting simultaneous actuation of the upper and lower cylinders between printing and "off-impression" positions. A throw-off cylinder actuates a series of links to rotate the eccentric bearings.

3,785,288

INK ROLL CARTRIDGE

Alexander Hunter, Chalfont, Pa., assignor to Decision Data Corporation, Warminster, Pa.

Filed July 6, 1971, Ser. No. 159,811
Int. Cl. B41f 1/46, 31/24, 31/32
U.S. Cl. 101—348 12 Claims



A cartridge for an ink roll is disclosed comprising a pair of cylindrical casing or shell elements each of which has a cylindrical side wall and end walls. The ink roll is encased within the two cylindrical elements which are nested together and mounted for limited relative rotation with respect to one another. Each cylindrical element has an opening in the side wall. The openings are out of registry with one another thereby sealing the cartridge and preventing contact with the ink roll when the cylindrical elements are in a first position. Upon relative rotation of the elements to a second position the openings are in registry so that a portion of the ink roll is exposed for contact by a printing member. A releasable fitting, for example of the bayonet type is provided on the end wall of one of the casing elements. Upon rotation of the other casing

element to lock the bayonet fitting the two casing elements are caused to rotate relative to one another to expose the ink roll. Relative rotation of the casing elements in the opposite direction effects release of the bayonet fitting and movement of the casing elements to close the cartridge. Also disclosed are mounting means for moving the cartridge toward and away from the printing members.

3,785,289

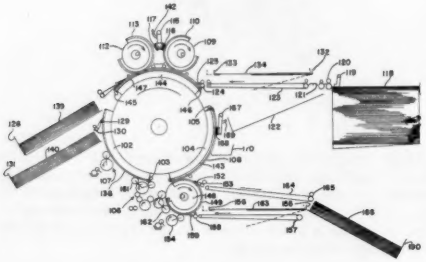
COPIER-DUPLICATOR

William Ward Davidson, Jr., Port Washington, N.Y., assignor to Robert C. Brown, Jr., Highwood, Ill., a part interest

Continuation-in-part of Ser. No. 115,502, Feb. 16, 1971, abandoned. This application July 31, 1972, Ser. No. 276,718

Int. Cl. B41n *1/06; B41f 35/06*

U.S. Cl. 101—450 **8 Claims**



A method and apparatus for producing multiple high quality copies of each of a series of one or two sided originals on ordinary paper while obtaining maximum net production in terms of both the number of originals copied and the number of copies produced, wherein a first right reading offset lithographic master or pair of masters are produced by known means from one or both sides of a first original, processed, pre-wet and attached to the plate holding surface or surfaces of an offset lithographic duplicator which then produces the desired number of one or two sided copies of the first original, with the image or images on the master or pair of masters being dampened (if required), inked and then offset onto a first offset blanket of first pair of offset blankets from which said image or images are in turn offset onto one or both sides of ordinary copy paper. While these copies from the first original are being run, a second master or pair of masters are being produced from the second original, processed and pre-wet. When the desired number of one or two sided copies of the first original have been produced, the first master or pair of masters are ejected. The second master or pair of masters are then immediately attached to the plate holding surface or surfaces and the process repeated.

3,785,290

BOMB FIN SHOCK ABSORBER ASSEMBLY

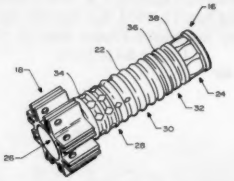
Gary E. Castor, China Lake, Calif., and William J. De Gain, Warren, Mich., assignors to The United States of America as represented by the Scetretary of the Navy, Washington, D.C.

Filed Mar. 1, 1971, Ser. No. 119,769

Int. Cl. F42b *25/02*

U.S. Cl. 102—4 **1 Claim**

A bomb fin shock absorber assembly having a bomb fin support attached to a bomb by set screws, and a bellows type shock absorber slideably mounted on said support. A collar mounted on one end of the shock absorber is coupled to the bomb fin by link members such that the shock absorber will reduce the shock caused by the opening bomb fin, by collapsing at least in part.



3,785,291

DEVICE FOR CLOSING OFF DEFECTIVE HEAT EXCHANGER TUBES

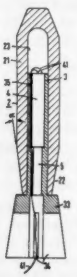
Axel Bergbauer; Manfred Ploger, and Gunther Seyd, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 16, 1972, Ser. No. 253,853

Claims priority, application Germany, May 18, 1971, P 21 24 530.7

Int. Cl. F42b *3/04*

U.S. Cl. 102—24 R **6 Claims**



The device for closing off a defective heat exchanger tube includes a metallic plug having a blind hole in which a sleeve of plastic, cardboard or the like is mounted. The plug has a cylindrical cross-section at the forward end to fit in the tube and a conically tapered outer surface at the open end. The sleeve encloses an explosive charge within the plane of the conically tapered outer surface of the plug and is provided with an enlarged end portion which projects from the plug. This end portion is conically tapered and slotted to jam in the heat exchanger tube. Upon detonation, the explosive charge expands and welds the conically tapered surface portion of the plug to the heat exchanger tube to close off the end of the tube.

3,785,292

PIEZOELECTRIC PERCUSSION FUZE

Hellmut Bendler, Nurnberg; Uwe Brede, Schweig; Heinz Gawlick, Furth, and Hans-Heinrich Rudolph, Egersdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 1, 1970, Ser. No. 42,063

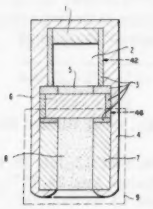
Claims priority, application Germany, May 30, 1969, 1927519

Int. Cl. F42c *11/02, 1/04, 19/06*

U.S. Cl. 102—70.2 R **12 Claims**

Piezoelectric percussion fuze for projectiles wherein mechanical impact energy is converted, in a piezoelectric

transducer, into an electric voltage for the detonation of a primer charge, characterized in that the piezoelectric transducer is connected to the primer charge via a semiconductor element exhibiting a threshold value breakdown characteristic.

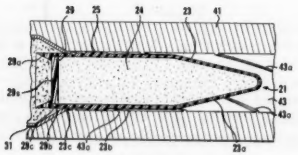


3,785,293

PRACTICE AMMUNITION

Irwin R. Barr; Nicholas J. La Costa, and William O. Davis, all of Baltimore, Md., assignors to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 103,079, Dec. 31, 1970, abandoned.
This application Jan. 19, 1973, Ser. No. 324,910
Int. Cl. F42b *9/20, 5/22*
U.S. Cl. 102—92.7 **16 Claims**



Practice ammunition including a projectile formed by a thin walled frangible plastic body casing or shell having a spin-weld interconnected rear closure element and being filled with a loose mass of finely divided particulate material of substantially higher density, and preferably of relatively low animal toxicity. The plastic body casing or shell is smooth walled and formed without longitudinal grooving, and if fragmented on exit from a rifled barrel through the combined lateral forces of set-back and centrifugal force operating to radially expand the mass of particulate filler. The particulate material is partially dispersed by these same forces and further dispersed and retarded by wind resistance after leaving the barrel so as to fall to the ground within a relatively short distance from the barrel. A key slot is formed in a rear closure element for rotational locking during spin welding assembly of the body casing or shell, and a rearwardly facing annular obturator encompasses the key slot.

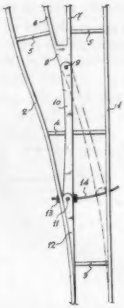
3,785,294

SWITCH FOR ELEVATED BINARY RAILWAY VEHICLES

Alejandro Goicoechea Omar, Madrid, Spain, assignor to S.A. De Trenes Vertebrados, Madrid, Spain

Filed Sept. 28, 1971, Ser. No. 184,459
Int. Cl. A63h *9/32*
U.S. Cl. 104—130 **4 Claims**

A switch for elevated binary railway vehicles, in which the outer rails are completely fixed and the only moving piece is a central articulated tongue or blade which turns through the angle necessary to allow trains to pass over one or other of the two tracks of the fork. The free end member of the tongue is articulated so that when its inner end makes contact with the fixed track its outer end can continue turning towards the inside of the track and thereby provide a smooth path for the passage of the trains.

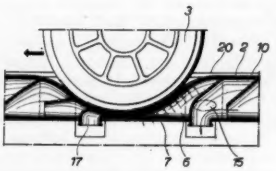


3,785,295

CAR CONVEYOR, IN PARTICULAR FOR A WASHING CAR MACHINE

Olli Juhani Kiukkonen, Kotka, Finland, assignor to Rateko Oy, Karhula, Finland

Filed June 27, 1972, Ser. No. 266,619
Claims priority, application Finland, Mar. 2, 1972, 776/72
Int. Cl. B65g *35/00*
U.S. Cl. 104—155 **6 Claims**



Car conveyor, in particular one intended for a car washing machine, which moves the car with the aid of stops pushing against the wheels on one side at least and which consists of an elastic tube flattening under the car wheel to full closure, into which tube a liquid or gaseous pressure medium is conducted so that the stop moving the car wheel is formed of the inflating tube. The tube has been composed of hollow wedge-like parts, which have been placed one into the other and joined at their outer rims so that within the tube chambers are formed, and that at the narrower end of the wedge-shaped part there is an aperture for conducting the pressure medium from one chamber to the other.

3,785,296

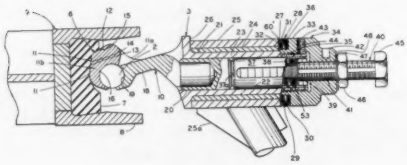
CABLE GRIP CLAMP ARRANGEMENT

Walter V. Berry, Pittsburgh, and Paul J. Hunziker, Zelienople, both of Pa., assignors to Pullman Incorporated, Chicago, Ill.

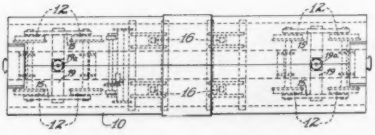
Filed Aug. 25, 1971, Ser. No. 174,754
Int. Cl. F16g *11/03, 11/00*
U.S. Cl. 104—202 **7 Claims**

A cable grip clamp arrangement for a ski tow wherein the arrangement includes a fixed outer jaw member connected with the ski lift chair hanger bar and an inner movable jaw member and a spring cartridge within the arrangement between the fixed and movable jaws for urging the movable

jaw toward the fixed jaw for tight engagement of the clamp arrangement about the cable, the cartridge including a plurality of pairs of opposed Belleville spring washers. A further feature is to provide for a flat generally vertical shoulder on the fixed jaw for engagement with a generally flat vertical surface of the bull wheel liner to prevent the ski lift chair from swinging outward by centrifugal force as it comes around the bull wheel. A further feature is to provide for a spring washer installed in the outer barrel portion of the fixed jaw member for engagement with the chair clamp that is disposed peripherally about the barrel portion of the fixed jaw member to exert pressure against the end of the chair clamp in order to prevent swinging of the chair back and forth, in the line of the cable.

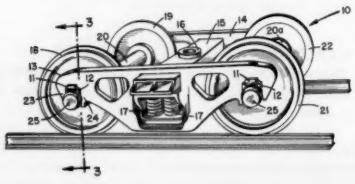


3,785,297
MOTORIZED RAILWAY SCALE TEST CAR
Benjamin R. Barnard, Minnetonka, and Douglas A. Puariea, St. Paul, both of Minn., assignors to The Maxson Corporation, Ramsey, Minn.
Filed July 26, 1971, Ser. No. 166,084
Int. Cl. B61c *7/00, 9/00;* **B61d** *15/00*
U.S. Cl. 105—112 **7 Claims**



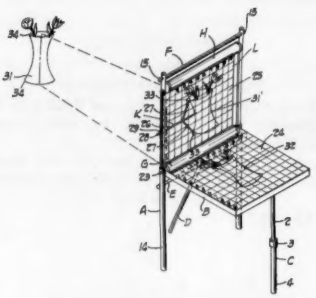
A railway scale testing car of a known weight which is self propelling and which has jacks designed to lift the entire car and truck on a short section of rail including special retaining brackets to lift the wheels and axles as well.

3,785,298
CUSHION MOUNTING BEARING ADAPTOR FOR RAILWAY TRUCKS
David J. Reynolds, Upper Arlington, Ohio, assignor to Buckeye Steel Castings, Columbus, Ohio
Filed Feb. 16, 1972, Ser. No. 226,698
Int. Cl. B61f *5/30, 5/38, 15/02*
U.S. Cl. 105—218 R **12 Claims**



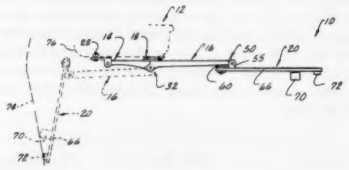
An elastomeric cushion is provided for a railway vehicle truck which allows for lateral movement between the bearing assembly and side frame of the truck only through shear of the elastomer. The cushion is disposed above the bearing assembly of a railway vehicle truck between the roof of the pedestal jaws and a novel adapter having a substantially flat upper surface and a flange extending axially along each edge thereof and about the edge of the cushion.

3,785,299
KE-EASEL
George H. Caperton, Jr., 18501 Hilliard Rd., Apt. 104, Rocky River, Ohio
Division of Ser. No. 846,312, July 28, 1969, Pat. No. 3,660,903. This application Aug. 24, 1971, Ser. No. 174,415
Int. Cl. A47b *85/00*
U.S. Cl. 108—11 **2 Claims**



As a drawing aid, a collapsible easel is provided which may be converted to a drawing table with a removable front-supporting leg serving interchangeably as a portion of an easel brace.

3,785,300
VEHICLE SNACK TRAY
Robert K. Anderson, 638 N. Dellrose, Wichita, Kans.
Filed Apr. 10, 1972, Ser. No. 242,415
Int. Cl. A47b *37/00*
U.S. Cl. 108—44 **1 Claim**



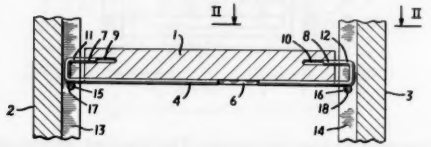
Tray apparatus has a mount with an arm pivotally secured thereto. A tray is pivotally secured to the outer end of the arm. A lock fixes the positions of the mount and the arm in the extended position. It preferably has means to secure the tray in a storage position. The tray apparatus is adapted to pivot between an extended position where it is locked for use and a folded storage position.

3,785,301

ADJUSTABLE SHELVING STRUCTURE

Harald Oskar Lundqvist, 17, rue Emile Yung, Geneva, Switzerland

Filed Apr. 16, 1973, Ser. No. 351,587
Claims priority, application Sweden, Apr. 18, 1972, 5049/72
Int. Cl. A47b 57/08
U.S. Cl. 108—109 7 Claims



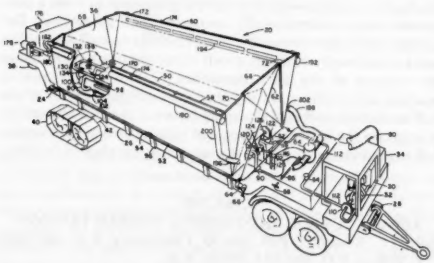
In a shelving structure comprising vertical corner posts and shelves having end portions disposed between two opposite corner posts, each end of the shelf is supported by a piece of rigid wire extending in a groove across the under-side of the end portion of the shelf and having end portions bent upwardly and inwardly and enter holes in the front and back edges of the shelf. The bent end portions of the wire form vertically disposed protruding loop portions which extend into grooves in the corner posts and are positioned and supported vertically by pins inserted in horizontal holes intersecting the grooves in the corner posts.

3,785,302

INCINERATORS FOR POLLUTION FREE BURNING OF SOLID WASTE MATERIALS AT LOW COST AND WITH REDUCED POSSIBILITY OF ACCIDENTAL FIRE SETTING, OFTEN, TRANSPORTABLE, PORTABLE, AND/OR SEMI PERMANENTLY LOCATED

Elmer H. Davis, 404 N. "D", Apt. 5W, Tacoma, Wash.

Filed Feb. 11, 1972, Ser. No. 225,540
Int. Cl. F23g 7/00
U.S. Cl. 110—8 C 16 Claims



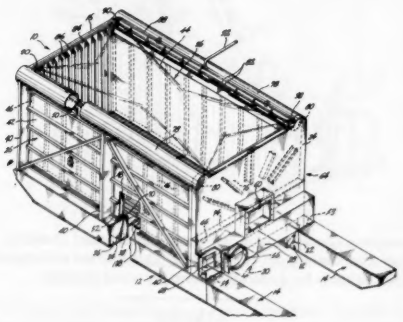
Burning of solid waste material such as: slash and small growth, resulting from logging operations to acquire merchantable timber and wood products and/or to clear right of ways for vehicles or power lines; selected debris from demolition operations; selected debris taken from transfer stations and/or deposit areas where city wastes are received; and selected debris from wastes created at dwellings; is accomplished in a manner whereby controlling the burning process in an incinerator eliminates completely or in varying degrees the amount of pollutants discharged into the atmosphere. At the same time this method reduces the direct operating costs, possibilities of setting ancillary fires and the need for extended tending and/or dousing of several fires. In some embodiments, this incinerator is completely transportable to the general area over public roads and then after arrival to specific multiple locations off public roads it is conveniently moved over unimproved land to places where the incinerator is needed.

3,785,303

PORTABLE DEBRIS INCINERATOR

Henry R. Hopkins, 7201 92nd St., S.E., Merder Island, Wash.

Filed Aug. 30, 1972, Ser. No. 285,030
Int. Cl. F23g 7/00
U.S. Cl. 110—8 R 23 Claims



A portable incinerator for use in burning debris, for example, obtained in right-of-way clearing operations, has an incinerating region vertically enclosed by a pair of sidewalls and end walls in a rectangular configuration. The container is mounted on a pair of hollow skids which are longitudinally divided into two air channels. The longitudinal sidewalls of the container are formed from two spaced-apart plates which form an air passage. The upper end of the outer plate is open to form an air inlet. The bottom end of the air passage communicates with one of the fluid channels in the skids. Air is drawn through the sidewalls from the top into the first fluid channel in the skids by a fan operably connected to the skid channel. Feed air is supplied to the incinerator through ports in the skids adjacent the bottom of the sidewalls, which ports communicate with the second air channel in the skids. The exhaust from the fan supplies the feed air to the skid channels. The fan exhaust air is also directed to a pair of plenums mounted on top of the sidewalls. These manifolds have ports which direct a curtain of air over the top of the container to prevent smoke and ash from rising out of the container. The fan is mounted adjacent one of the end walls, which is constructed from three parallel spaced plates. The spaces between the three plates form two manifolds for the intake and exhaust from the fan.

3,785,304

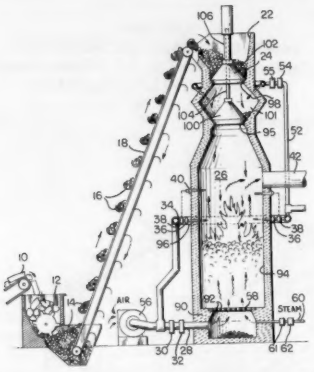
METHOD AND APPARATUS FOR THE THERMAL REDUCTION OF RUBBER OR PLASTIC MATERIAL

Kenneth W. Stookey, 780 Maple Rd., Williamsville, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,003
Int. Cl. F23g 7/00
U.S. Cl. 110—8 R 26 Claims

A method and apparatus for thermally reducing rubber or plastic materials in which the rubber or plastic material is comminuted to a predetermined size and it is then subjected to primary combustion in the lower portion of a first chamber with the gases and distilled combustible vapors in the upper portion of the first chamber being subjected to secondary combustion and with the still only partially oxidized gases then being conducted to a second chamber and admixed with further air for tertiary combustion and the combustion thereof completed and with these last hot gases being used as the heat input for a boiler, such as a waste heat boiler. Automatic con-

trols are provided to control the temperature in the upper portion of the first mentioned chamber to within predetermined limits and a further control is provided to insure substantially

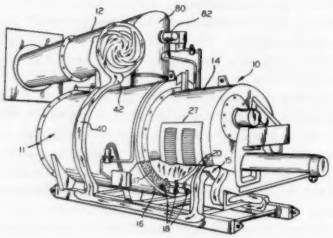


complete combustion in the second mentioned chamber, and with a bare minimum of excess air. This method and apparatus is not suitable for generally municipal waste disposal.

3,785,305
INCINERATOR

Donald J. Schrage, Germantown, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed May 3, 1972, Ser. No. 249,947
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **15 Claims**



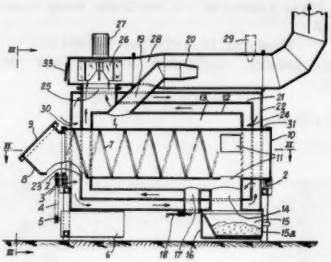
An incinerator having a support assembly structure which also conducts combustion air to a main combustion chamber and an afterburner. Refuse is fed into the main combustion chamber by a compactor which includes a refuse receiving chute having a wall which pivots for refuse compaction. The afterburner air feed system includes a first tangential set of air passages for gas mixing, a venturi section to create a positive draft, and a combustion air feed system. A temperature control regulates the air feed and afterburner temperature by adjusting air feed and fuel.

3,785,306
METHOD AND APPARATUS FOR INCINERATING REFUSE

Jean Jaget, deceased, late of 34, rue Moliere, Montreuil, France, and by Pierre Jaget, legal representative, 20 rue Ramponeau, Paris, France

Filed Feb. 15, 1972, Ser. No. 226,626
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **12 Claims**

Refuse is incinerated by advancing it longitudinally within an externally heated rotating furnace and utilizing the combustible gases emanating from the refuse to supply part of the

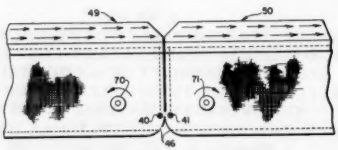


fuel used to heat the furnace. The invention includes apparatus for use in carrying out this process.

3,785,307
CUFF MAKING SYSTEM

John P. Hunter, Jr., Dunwoody; Ross Erle Norton, Dawson, and William O. Mitchell, Vidalia, all of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Filed Apr. 13, 1972, Ser. No. 243,683
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 **3 Claims**



'A system of making shirt cuffs wherein cuff panels are stitched to a continuous strip of lining material to form a continuous strip of substantially contiguous cuff assemblies. Detecting means determines the line between two cuff assemblies and automatically actuates a cuff corner cutter which shapes the corners of the cuff assemblies. A two needle sewing machine and cutter sews together the contiguous ends of the cuff assemblies and cuts the lining between the cuff assemblies to separate the cuff assemblies, and turning means position the cuff assemblies properly for sewing across the shaped corners.

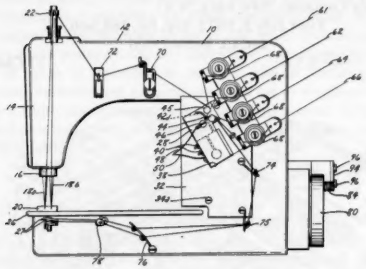
3,785,308
APPARATUS FOR MONITORING THREAD TENSION

Robert C. Brandriff, P.O. Box 95, Clarksburg, N.J., and John F. Wilcox, P.O. Box 503, Dover, N.J.

Filed Dec. 9, 1971, Ser. No. 206,432
Int. Cl. B65h *59/10*
U.S. Cl. 112—218 R **10 Claims**

Apparatus for monitoring thread tension in a plurality of threads employed in a power driven machine having at least one needle and a plurality of threads which comprises a plurality of means for sensing the tension of individual threads and operatively connected means for individually adjusting the tension of each sensor means. A preferred apparatus is an electromechanical thread tension device which further includes an electrical switch associated with the means for sensing thread tension. A particularly preferred apparatus which is suitable for monitoring chain stitches produced by sewing and like machines comprises the electromechanical thread tension device, gating assembly means for detecting

thread tension during the period when the stitch is being set, and an electrical control system designed to produce a warning signal and/or mark the fabric and/or stop the machine in the event of insufficient thread tension.



3,785,309

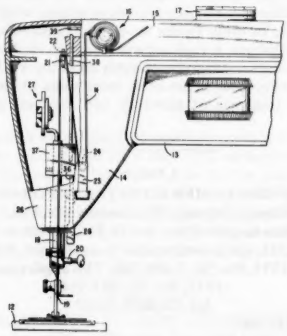
THREAD TENSIONING MECHANISM FOR A SEWING MACHINE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,091

Int. Cl. D05b *47/00*

U.S. Cl. 112—254 **7 Claims**



The present invention relates to a thread tensioning mechanism for a sewing machine. The mechanism is intended to obviate the problem of fatigue which normally occurs in such mechanisms, as a result of extended use of the machine. The tension regulating member of the machine is thus enabled to retain its accuracy through substantially the life of the machine. The tensioning mechanism comprises thread engaging means adapted to generate thread tension by providing resistance to the movement of a thread therethrough in proportion to a force applied to said thread engaging means and means for developing and applying said force thereto. The means for developing said force and for applying same to said thread engaging means comprises magnetically interacting elements, one of which is carried by a lever operatively connected to said thread engaging means, and the other of which is carried shiftably by operator influenced means, whereby said other element may be selectively positioned relative to the fulcrum of the lever to vary the thread tension.

The present invention relates to a thread tensioning mechanism for a sewing machine and more particularly to a tensioning mechanism for the needle thread of such sewing machine.

3,785,310

LUBRICANT SEALING DEVICE FOR A WORK FEEDING MECHANISM OF A SEWING MACHINE

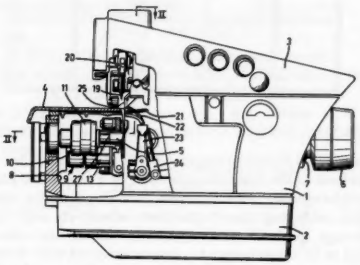
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & Co., Milan, Italy

Filed Mar. 2, 1972, Ser. No. 231,276

Claims priority, application Italy, Mar. 29, 1971, 22415 A/71

Int. Cl. D05b *71/00*

U.S. Cl. 112—256 **3 Claims**



A lubricant seal member for a sewing machine carried on the feed bars that actuate the device for advancing a workpiece as it is sewn and disposed so as to prevent the leakage of lubricant from the source of drive for the feed bars to the workpiece advancing device.

3,785,311

METHOD FOR PRODUCING A METALLIC CONTAINER OR CAN

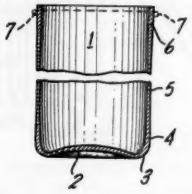
Tatsumi Yoshikawa, Tokyo, Japan, assignor to Daiwa Can Co., Ltd., Tokyo, Japan

Filed May 26, 1971, Ser. No. 147,073

Claims priority, application Japan, June 4, 1970, 45/54468

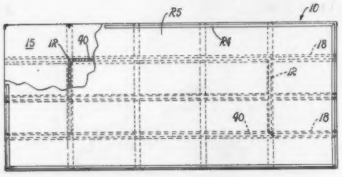
Int. Cl. B21d *22/30*

U.S. Cl. 113—120 H **1 Claim**



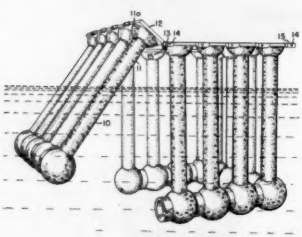
A metal blank or tin plate is drawn to form a cup, said cup is then subjected to ironing, trimming and flanging to produce a metallic container or can. However the final ironing is not effected at all on the upper part of the can body wall. For this purpose, a punch core is used which has the upper portion of smaller diameter and the rest portion of larger diameter, the latter constituting a substantial part of the core. The container thus produced has a thin walled center portion constituting a greater part of the body wall and a thick walled upper portion constituting a smaller part of the body wall.

3,785,312
MODULAR FLOATING STRUCTURE
Gordon L. Schneider, 5546 E. Donner Ave., Fresno, Calif.
Continuation-in-part of Ser. No. 793,306, Jan. 23, 1969, abandoned. This application July 26, 1971, Ser. No. 166,101
Int. Cl. B63b 35/44
U.S. Cl. 114—.5 F 19 Claims



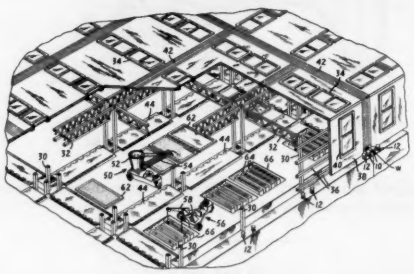
A fabricated floating structure particularly suited for use as a houseboat or the like, characterized by a repetative plurality of interchangeable, prefabricated, modular flotation units, or modules, including closed chambers selectively used to contain flotage, payload, or consumable ballast, and which are adapted to be interchangeably interconnected with beam-like members so arranged and disposed as to form a plurality of trusses extending between the modules, whereby the devices may be rapidly assembled and interconnected into laterally and longitudinally extended truss-like structural components which integrate the modules into a bouyant hull capable of supporting vertically disposed bulkheads forming living compartments and the like.

3,785,313
SPHERICAL MODULE CONNECTORS
Edgar N. Rosenberg, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 14, 1972, Ser. No. 280,699
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 T 2 Claims



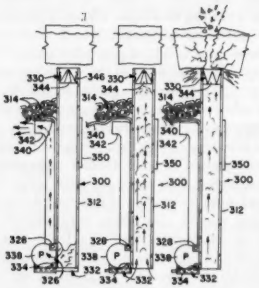
Elongate rigid flotation modules are coupled together along deck and submerged portions to provide a stable floating platform. The submerged portion on one of the floating modules is spherically shaped and a cylindrical extension from the submerged portion of an adjacent flotation module is configured to mechanically cooperate with the spherically-shaped portion in a sealed relationship. Evacuating the water from the now-sealed cylindrical extension creates a pressure differential which holds the submerged portions of the flotation modules together. This manner of seating between the cylindrical extension on the spherically-shaped surface allows precise positioning of the deck portions prior to their interconnection.

3,785,314
FLOATING FACTORY FOR THE MANUFACTURE OF BUILDING COMPONENTS
Harry J. Scanlan, Garden City, N.Y., assignor to Shoreline Precast Company, New York, N.Y.
Filed July 3, 1972, Ser. No. 268,500
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 F 27 Claims



A floating factory for the manufacture of building components comprises a multiplicity of modular floating deck barges arranged in adjacent relation to form a substantially continuous work area. The barges are ballasted or initially constructed to maintain the work area essentially level with the barges in a plane. The barges are preferably connected together to form the work area in a manner that resiliently holds them in adjacent relation while still affording a controlled relative movement under wave action, wind loads, live load transfer or other forces tending to cause relative movement of the barges. A roof and exterior walls enclose at least a part of the work area, and preferably all of the work area, and bridges connect the decks of at least some of the adjacent barges for transport of materials and products around the work area.

3,785,315
LIQUID-HAMMER ICEBREAKER FOR SHIPS
Jacob W. Wagner, Schuster Rd., Jarrettsville, Md.
Continuation-in-part of Ser. No. 16,516, March 4, 1970, Pat. No. 3,698,341, and a continuation-in-part of Ser. No. 120,271, March 2, 1971, Pat. No. 3,698,340. This application June 16, 1972, Ser. No. 263,554
Int. Cl. B63b 35/08
U.S. Cl. 114—40 28 Claims



Open water ice breaking means and method including in one embodiment a vertical tube for disposal beneath floating ice, valves for closing off the ends of the tube, a pump for evacuating ambient water from the tube, and a control system

for admitting water to gush upward under ambient pressure through the lower valve, the evacuated tube and the upper tube, to break the ice through impact of the upward moving column of water against the lower face of the ice; in a second embodiment a plurality of tubes similar to that described operates in synchronism to focus the effect produced by impact of the water on the ice; alternating operation of a plurality of tubes is provided in another, similar embodiment; a further embodiment uses compressed air to displace the ambient fluid and operates without top and bottom valves; special tubes and valves are provided for the invention, as well as ship adaptions.

3,785,316

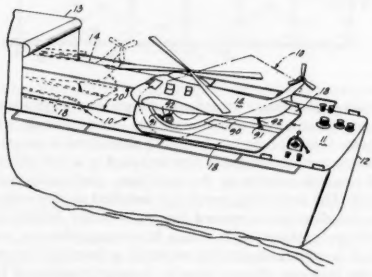
HEAVY DUTY SWIVEL PLATFORM CONVEYOR

John C. Leming, 25180 Stratford Rd., Glen Ellyn, Ill.; Donelson C. Glassie, 3810 Bradley Ln., Chevy Chase, Md., and Roy M. Jahnel, 2016 Jameson St., Washington, D.C.

Filed Apr. 21, 1972, Ser. No. 246,460

Int. Cl. B63b *35/50*

U.S. Cl. 114—43.5 **18 Claims**



A heavy-duty swivel platform conveyor such as may serve as a helicopter landing pad on a ship deck includes a platform structure, transporting longspan screw device under the platform fixed to the deck or other base and with driving couplings with the platform enabling swiveling of the platform relative to the path along which the platform is adapted to be transported by operation of the longspan screw.

3,785,317

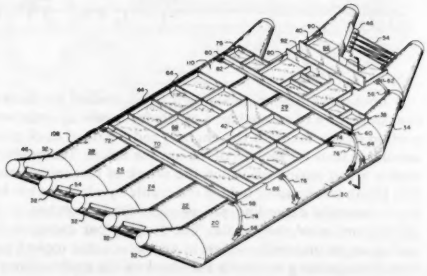
BOAT CONSTRUCTION AND METHOD

Jack L. Currey, 1580-A Millcreek Way, Salt Lake City, Utah

Filed Apr. 10, 1972, Ser. No. 242,559

Int. Cl. B63b *1/10*

U.S. Cl. 114—61 **8 Claims**



A boat construction and method for transporting passengers and cargo particularly over rough water, the boat construction comprising a plurality of elongated tubular pneumatically filled floats joined in a flexible manner. Each float has a plurality of compartmented segments with the extreme forward and rear segments projecting away from the water. A cargo carrier is lashed to the connected floats and the device is propelled by an outboard motor that has been mounted to a transom lashed between the assembled floats. The method includes lashing flat platforms to be used as cargo carriers to floats which have also been lashed together. Vacant spaces are provided between selected ones of the floats providing a recessed area for receiving cargo. Assembling the floats and cargo carrier according to this invention accommodates significant bending movements of the boat construction over obstacles encountered in the water.

3,785,318

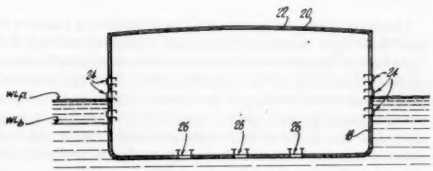
DOCKING AND DRYDOCKING MEMBERS FOR EXTERNALLY INSULATED SHIPS

Frank J. Iarossi, Middletown, N.J., and Walter C. Cowles, Cobham, England, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed May 18, 1971, Ser. No. 144,421

Int. Cl. B63b *25/16*

U.S. Cl. 114—74 A **6 Claims**



An arrangement and construction for longitudinal extending bearing members disposed within the external insulation and attached to the hull of an externally insulated tanker for transferring impact loads such as may result from docking and drydocking through the insulation to the ship's structure. These longitudinal bearing members are made from a material such as balsa or hard rubber which possesses high compressive strength and are disposed along the sides and bottom of the ship's hull.

3,785,319

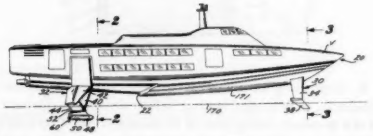
HYDROFOIL VESSEL

Leon J. Danforth, Long Beach, Calif., assignor to Richard B. Markus, trustee, San Francisco, Calif.

Filed June 11, 1971, Ser. No. 152,215

Int. Cl. B63b *1/26*

U.S. Cl. 114—66.5 H **9 Claims**

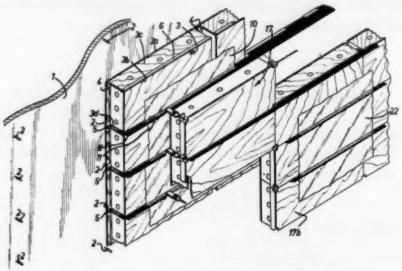


A canard type hydrofoil vessel utilizing a lightly loaded bow foil unit to act as a pitch suppressor to oncoming waves in conjunction with dual main foil units. The bow foil unit supports approximately 15 to 25 percent of the weight of the vessel and the main foil units support approximately 75 to 85 percent of the weight of the vessel when the vessel is foilborne.

3,785,320
INTEGRAL TANK FOR TRANSPORTING LIQUEFIED GAS

Michel Bourgeois, Le Havre, and Pierre Jean, Fontaine La Mallet, both of France, assignors to Gaz Transport S.A.R.L., Paris, France

Filed Aug. 30, 1971, Ser. No. 175,980
Claims priority, application France, Sept. 1, 1970, 7033789; July 21, 1971, 7126652
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 A **22 Claims**

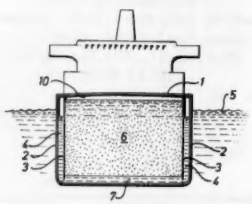


Methane tanker comprises two heat insulating barriers and two fluid-tight barriers, positioned alternately with a fluid-tight barrier innermost and the outermost insulating barrier attached to the hull of the ship. The other fluid-tight barrier is positioned between the two insulating barriers and comprises vertical plates joined together by welding to horizontal metallic strips. One edge of each strip is slidably connected to the outer insulating barrier and the other edge is resiliently connected to the inner insulating barrier.

3,785,321
SAFETY DEVICE AGAINST LEAKAGE FROM SHIPS, ESPECIALLY TANKERS

Arne L. Backstrom, Stockholm, Sweden, assignor to Svenska Entreprenad AB Sentab, Stockholm, Sweden

Filed Nov. 18, 1971, Ser. No. 199,998
Claims priority, application Sweden, Nov. 23, 1970, 15866/70
Int. Cl. B63b *25/12*
U.S. Cl. 114—74 R **6 Claims**

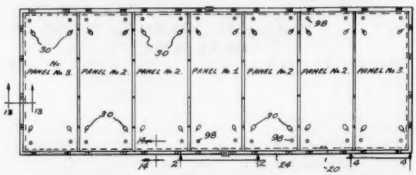


A ship such as a tanker for the transport of oil and oil products, is provided with a safety device to prevent leakage of the product being stored or transported. The safety device comprises a shield which preferably is flexible and extends along the ship's hull in spaced relation thereto so as to define vertically extending narrow spaces at the inner side of the hull. Said narrow spaces are opening in the bottom region of the ship and shall when the ship is used contain a liquid having the same or a higher density than the transported product. As an example the product may rest on a bed of water at the ship's bottom, water than also being present in the said narrow spaces. If for instance due to a collision a hole is formed in the ship's hull the liquid level in the actual narrow spaces will be adapted after the sea level whereby the level of the product in the cargo space takes a balanced position in which leakage of the product is prevented. As an alternative to water the transported product proper may be contained in the narrow spaces in which case a small leakage may occur if the hull of the ship becomes damaged.

3,785,322
HATCH COVER

Ammon W. Kersteter, Covington, La., assignor to Equitable Equipment Company, Inc., New Orleans, La.

Filed Mar. 2, 1972, Ser. No. 231,122
Int. Cl. B63b *19/14*
U.S. Cl. 114—201 R **27 Claims**

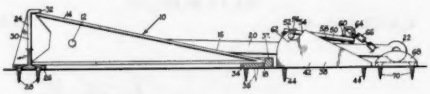


Sealing problems attendant dimensional variations in separate hatch cover panels arranged in side-by-side relation along the length of the hatchway are eliminated by an arrangement wherein one panel is first installed in a predetermined fixed position relative to the hatchway, preferably centrally thereof. The remaining panels are installed successively away from the first panel toward the ends of the hatchway. All panels are provided with means interengageable on installation of an adjacent panel to maintain a fixed predetermined spacing between adjacent panels. A range is provided for the sealing locus of the end panels with the ends of the hatchway, therefore compensating for cumulative dimensional variations in the panels along the length of the hatchway.

3,785,323
ANCHOR HOLD-DOWN DEVICE

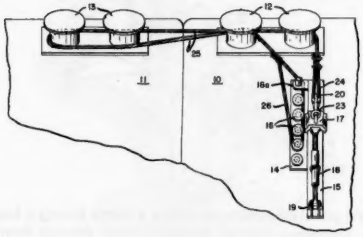
William F. Lantz, 3915 N.E. 72nd Ave., Portland, Oreg.

Filed Aug. 9, 1972, Ser. No. 279,084
Int. Cl. B63b *21/22*
U.S. Cl. 114—210 **2 Claims**



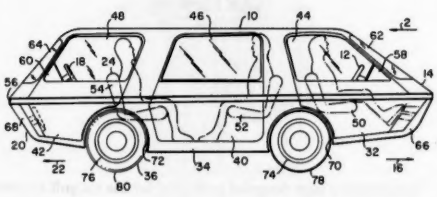
A hold-down device including a front bracket for hooking over the crown of an anchor, a cradle for receiving a rearward portion of the shank of the anchor, and a pair of deck plates serving as rests for the tips of the anchor flukes. The cradle includes a leaf spring on which the shank of the anchor rests. The shank is releasably held in the cradle by a locking bar having a laterally extending pin engageable in notches in the upper portion of the cradle. The locking bar carries a leaf spring on its underside which in an over-center locked position of the locking bar holds the shank of the anchor down on the spring in the cradle. A spring pressed catch is utilized to assist in maintaining the pin in the notches except when pulled out by the operator.

3,785,324
RATCHET HAUL DEVICES
Harold A. Guthans, Mobile, Ala., assignor to Guthans Engineering Co., Mobile, Ala.
Filed Oct. 27, 1971, Ser. No. 193,022
Int. Cl. B63b *21/58*
U.S. Cl. 114—235 A 4 Claims



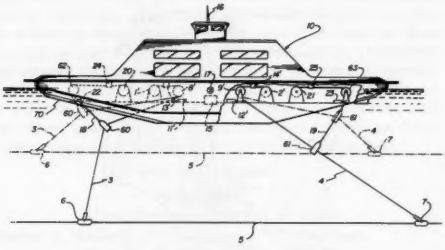
A ratchet haul device is provided for fastening two barges or like objects together which have upstanding stanchions, which device includes an elongated base member fastened to one barge, a guide rail extending lengthwise of said base, a plurality of stanchions on a line parallel to the guide rail, a crosshead movable on the guide rail having a locking hook, a ratchet means fixed at one end to the guide rail and at the other to the crosshead whereby the crosshead is movable on the guide rail, a cable having a loop at each end and a cable locking means receiving one such loop and the other loop being removably engaged in said hook means.

3,785,325
AMPHIBIOUS STRUCTURE
Leonora M. Mycroft, 1973 Campus Dr., Fairborn, Ohio
Filed June 14, 1971, Ser. No. 152,501
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R 1 Claim



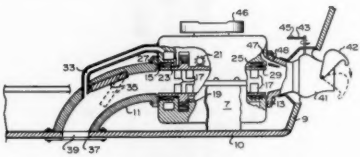
An amphibious vehicle having means for driving the vehicle on land at one end thereof and having means for driving the vehicle in the water at the other end thereof including a seat in the vehicle adapted to be pivoted about an axis transverse of the vehicle to provide a driving seat for the vehicle when it is driven from one end and a rear seat for the vehicle when it is driven from the other end.

3,785,326
WATER PROPULSION SYSTEMS USING SUBMERGED PROPULSION CABLE
Steven B. Mullerheim, 89 Edgecroft Rd., Kensington, Calif.
Filed Nov. 8, 1971, Ser. No. 196,489
Int. Cl. B63b *21/56*
U.S. Cl. 115—7 9 Claims



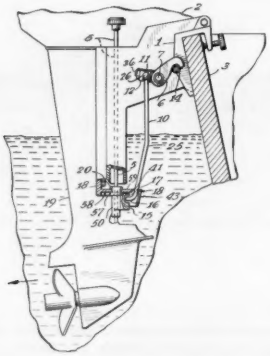
A water transportation system of the kind in which a vessel is driven by a submerged moveable propulsion cable, particularly one which may assume greatly varying depth. The vessel is connected to the propulsion cable by flexible tension members, such as connecting cables, and there are winches aboard the vessel on which the connecting cables may be wound. The winches are controlled by electronic control equipment which, in addition to radio signals received from shore, is governed by tension and declivity sensors monitoring the connecting cables. Provisions of different kind are made available for changing the effective moment arm about the vessel centroid at which the members linking the vessel to the propulsion cable are connected to the hull longitudinally thereof.

3,785,327
LIQUID PROPULSION APPARATUS AND METHOD OF FABRICATION
Albert C. Smith, Box 782, Los Altos, Calif.
Filed Sept. 28, 1971, Ser. No. 184,462
Int. Cl. B63h *25/46*
U.S. Cl. 115—16 15 Claims



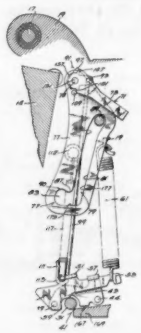
An improved liquid pumping unit for marine propulsion and the like includes as the rotatable shaft of an internal combustion engine a conduit which includes internal impeller vanes for pumping liquid therethrough at high volume and velocity and which also serves as the flywheel of the engine.

3,785,328
OUTBOARD MOTOR ANTI-TILT LOCKING MECHANISM
Robert F. Kloiber, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Aug. 14, 1972, Ser. No. 280,272
Int. Cl. B63h *1/14*
U.S. Cl. 115—17 **9 Claims**



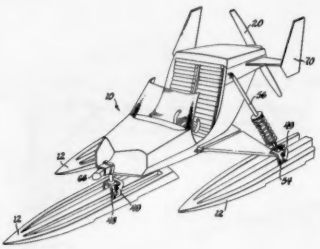
A tilt lock mechanism for an outboard motor incorporating locking fingers actuated by a flexible shaft driven by a channel cam keyed to the shift shaft of the engine. A readily disassemblable ball joint links the flexible operating shaft to a rotating mechanism carrying the locking fingers.

3,785,329
COMBINED REVERSE LOCK AND SWIVEL BRACKET HOLDING MECHANISM
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed July 12, 1972, Ser. No. 271,198
Int. Cl. B63h *21/26*
U.S. Cl. 115—41 **10 Claims**



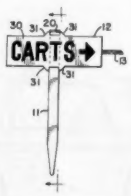
Disclosed herein is a marine propulsion device including means connected to a reverse lock and to a swivel bracket holding means for providing coordinated control of the reverse lock and of the swivel bracket holding means.

3,785,330
AIR DRIVEN VEHICLE
Robert M. Fox, 30518 Freda, Warren, Mich.
Filed Apr. 21, 1972, Ser. No. 246,298
Int. Cl. B62m *27/02*
U.S. Cl. 115—70 **12 Claims**



An air powered vehicle including a frame having a longitudinally extending central member which extends from the front of the vehicle rearwardly and upwardly in arcuate configuration to upper rear end. A transversly extending lower outrigger member is attached to the central member toward the front end of the central member and upper transversely extending outrigger member is disposed toward the rear of the central member. A vertical support member extends upwardly from the central member and supports the upper outrigger. A motor mounting means is disposed at the rear upper end of the central member and is defined in part by the upper outrigger member whereby a motor is supported at the rear upper end of the central member. A steerable surface engaging assembly is disposed at the front end of the central member and side surface engaging assemblies are connected to the outriggers and the frame by struts, connecting rods and pivotably interconnected links.

3,785,331
PLASTIC SIGN KIT
Robert C. Ferris, Chicago, Ill., assignor to Coursigns, Inc., Chicago, Ill.
Filed Sept. 25, 1972, Ser. No. 291,789
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 R **7 Claims**



A restrictive sign designed primarily for use on golf courses to designate restricted areas comprising a signboard for containing an inscription conveying certain information or instructions and an associated mounting stake for supporting the sign and a cord adapted to be extended between two or more stakes and held in slip-free relation on each stake to define areas to be avoided. The signboard is removably mounted on the stakes for ready interchangeability and the board and stake include interengaging means maintaining their cooperative relationship while the stake has stop means to support the signboard at a desired elevation and a reinforced surface for use in pounding the stake into the golf course. The design of

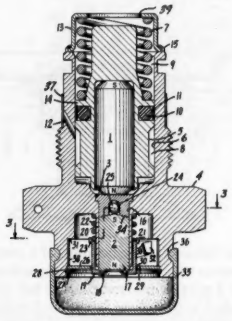
the signboard and mounting stake is such as to lend itself to manufacture in impact resisting molded plastic which may be of a conspicuous color.

3,785,332

MAGNETIC PRESSURE INDICATOR

Bernard F. Silverwater, Plainview, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,266
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **20 Claims**



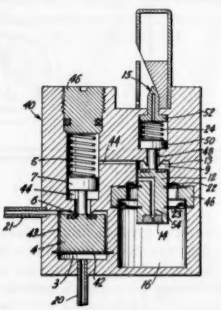
A magnetic differential pressure indicator is provided for detecting and indicating a pressure differential thereacross that is greater than a predetermined value in a fluid system. A loose nonmagnetic ball detent prevents resetting of the magnetic indicating means after actuation.

3,785,333

ALARM FOR SENSING A REDUCTION OF GAS SUPPLY PRESSURE FOR RESPIRATORS

Ernst Warncke, and Hans Haas, both of Lubeck, Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed June 2, 1972, Ser. No. 259,308
Claims priority, application Germany, June 15, 1971, P 21 29 529.4
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **5 Claims**



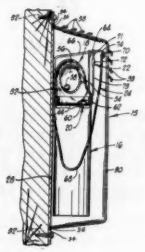
An alarm for sensing a reduction of gas supply pressure to a respirator comprises a housing having a first chamber with a gas pressure monitoring inlet connection for connection to the gas supply container and a medium pressure line for actuating fluid which is connected into the first chamber but which is divided from the monitoring gas connection by a diaphragm. A second chamber in the housing includes a diaphragm sealing arrangement dividing the chamber into a close zone and a control zone. The housing includes a first passage between the actuating fluid zone and the control zone which has a valve seat at the connection of the actuating fluid zone which is closed by a first valve body which is carried on the diaphragm and which is urged by the diaphragm under normal operating pressure to close the valve seat and close off the first passage. A monitoring spring biases the body in a direction to move off the valve seat when the monitoring pressure reduces by a predetermined amount. An alarm conduit having a fluid-operated alarm, such as a whistle, is connected to the control zone and it has a valve seat at the connection to the control zone which is sealed by a second valve body carried by the sealing diaphragm arrangement and which is normally opened by a biasing spring to permit the control medium to flow through the alarm conduit and actuate the whistle. The sealing means which carries the valve body is such that a throttle passage extends between the control zone and the closed zone in order to permit flow of the fluid from the control zone into the closed zone and a closing of the alarm conduit to, thus, cause a stopping of the flow of the medium pressure fluid.

3,785,334

GAS GENERATOR FIRE ALARM

Thomas A. Waldeck, 3517 E. Skinner, Wichita, Kans.

Filed Jan. 11, 1971, Ser. No. 105,478
Int. Cl. G08b *17/00*
U.S. Cl. 116—106 **4 Claims**



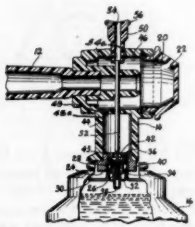
A fire alarm is contained in a housing. There is a gas generator connected to a whistle. An ignitor starts the gas generator. More particularly, a fire alarm with a gas generator operated whistle noisemaker is actuated by excessive heat in the vicinity of the fire alarm.

3,785,335

AIR HORN

William Wagner, c/o Watsco Inc., 1800 W. Fourth Ave., Hialeah, Fla.

Filed Aug. 4, 1971, Ser. No. 168,821
Int. Cl. G08b *21/00*
U.S. Cl. 116—112 **8 Claims**



A horn which may be sounded selectively by blowing through a mouthpiece or by release of compressed gas. Valve

means are provided to control the release of compressed gas and valve means are provided to close the mouthpiece. The two valve means may be independent or may be joined.

In the preferred embodiment a button, which when manually depressed opens a valve permitting the compressed gas to escape via the diaphragm and sound the horn, is provided with a central hole communicating to the diaphragm and is shaped like a mouthpiece. The horn may be sounded by blowing into the mouthpiece button to provide a stream of air past the diaphragm and through the horn. By manually depressing the button, the hole therein is automatically sealed.

3,785,336

TEMPERATURE INDICATOR

Gregory J. Roszkowski, Arcadia, Calif., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed July 1, 1971, Ser. No. 158,946

Int. Cl. G01k *11/06*

U.S. Cl. 116—114.5 **7 Claims**

A temperature indicator to determine if a patient's temperature is above normal or feverish comprises an elongated body having a gob-like coating on one end which has a contrasting color relative to the body and which will melt at a temperature slightly above the accepted normal of 98.6° F.

3,785,337

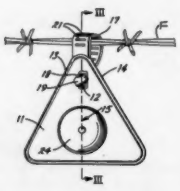
WIRE MARKER

Carl W. Flowerday, Holland, Mich., assignor to Maes Incorporated, Holland, Mich.

Filed Sept. 18, 1972, Ser. No. 289,992

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **7 Claims**



A warning device for use on fence wire, trees, posts and the like. The device has a flat base and an integral strap extending from an edge thereof. The free end of the strap has fastening means on the end thereof adapted to be coupled with the base of the device or the base of an adjacent warning device. The strap can encircle a fence wire or it can be secured, as by nails, to trees and posts for marking trails, driveway entrances and the like. A light reflector is mounted on the base.

3,785,338

SYSTEM FOR INDICATING THE POSITION OF A CONTROL MEMBER ADJUSTABLE BY MEANS OF A HANDWHEEL AND SPINDLE

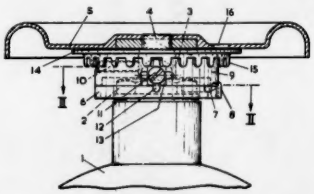
Jan Cornelis Visser, Soensdrecht, Netherlands, assignor to B.V. Maschinefabrik en Ilzergietery Holland-Bergen op Zoom, Bergen op Zoom, Netherlands

Filed Nov. 8, 1971, Ser. No. 196,572

Claims priority, application Netherlands, Nov. 11, 1970, 7016473

Int. Cl. F16k *37/00*

U.S. Cl. 116—125 **7 Claims**



A system for indicating the position of a control member adjustable by means of a handwheel and a spindle, in which the handwheel or a part connected thereto has an aperture and a surface provided with indicia is situated behind the aperture and can perform a relative rotation with respect to the handwheel about the spindle and is coupled to the spindle via means which rotate the said surface from an initial position through a given angle with respect to the spindle in dependence on the number of spindle revolutions.

3,785,339

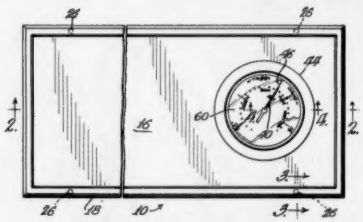
WEATHER INDICATING INSTRUMENT

George J. Niccoli, Chicago, Ill., assignor to Airguide Instrument Company, Chicago, Ill.

Filed Oct. 24, 1972, Ser. No. 300,423

Int. Cl. G09f *9/00*

U.S. Cl. 116—129 R **5 Claims**

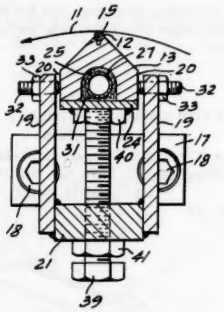


A weather instrument for indicating atmospheric pressure and expected weather conditions incident to falling and rising barometric conditions, including a stationary panel with a circular scale for indicating atmospheric pressure, an angularly adjustable transparent dial concentric with the pressure scale and having a reference line together with indicia at opposite sides thereof to indicate weather expectations, and a barometric device responsive to atmospheric pressure having an angularly movable needle over the pressure scale and the transparent dial, in an arrangement which permits the adjustable dial to be set with reference to the needle, wherever the needle is positioned, so that subsequent movement of the needle relative to the adjustable dial indicates not only atmospheric pressure but also expected weather conditions incident to falling and rising atmospheric conditions.

3,785,340
METERING BAR

Larry O. Stafford, Beloit, Wis.; William P. Wentworth, Rockford, and James J. Melead, Roscoe, both of Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Aug. 8, 1972, Ser. No. 278,710
Int. Cl. B05c *11/04*
U.S. Cl. 118—101 **18 Claims**

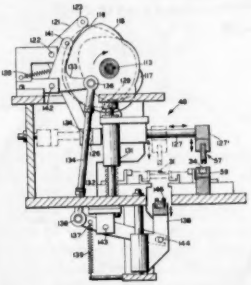


Deflection correction metering bar assembly for metering coating on a web. The assembly includes a rod holder having a recess extending along its top portion, a metering rod mounted in said recess, deflection correction bars for said rod holder, carrying jacking screws deflecting the rod holder in horizontal and vertical planes and holding the rod holder against sagging vertically or deflecting horizontally. A fluid passageway leads through the rod holder to accommodate the passage of temperature control fluid therethrough, to prevent coating from building up on the metering rod, and maintain an even coating on the web.

3,785,341
APPARATUS FOR APPLYING LIQUID TO ARTICLES WITHOUT TOUCHING THE ARTICLES

John H. Blewett, Reading, and Harry K. Naumann, Wernersville, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 744,082, July 11, 1968, Pat. No. 3,589,938. This application Aug. 5, 1970, Ser. No. 61,504
Int. Cl. B05c *3/09*
U.S. Cl. 118—421 **14 Claims**

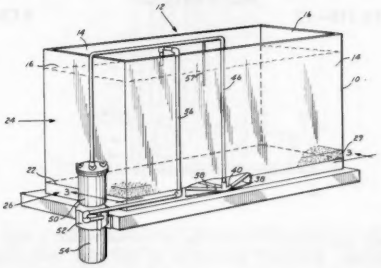


Coating fluid is applied to an article, without contacting a body of the article with means other than the fluid to be applied. An applicating member, having at least one tooth with a concavity therein, is dipped into a bath of coating fluid, retracted and fluid retained in and about the concavity by capillarity. The member is then brought into noncontacting relation with the article so that a portion of the article lies within the fluid-filled concavity. A quantity of fluid within the concavity contacts and flows about the article, coating it. Simultaneous coating of a plurality of paramagnetic-leaded electrical devices utilizes magnetic holding of the devices, luring the coating process, and an applicator with a plurality of spaced teeth arranged in a comblike array.

3,785,342
SELF-CLEANING AQUARIUM

George H. Rogers, 3160 Wright St., Denver, Colo.

Filed Mar. 31, 1972, Ser. No. 240,169
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **13 Claims**

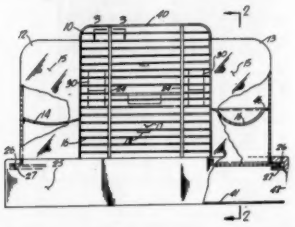


A self-cleaning aquarium includes a tank with a perforated partition spaced a small distance from the bottom of the tank to define an upper display portion and a lower drainage portion. Disposed within the drainage portion and resting on the bottom of the tank is a funneling drainage plate for receiving sedimentary material in the tank which passes through the perforated partition. The drainage plate has drain openings connected to a suction tube which draws the sedimentary material and liquid in the drainage portion of the tank out of the tank and directs it through an external filter including a pump for pumping the clarified liquid back into the tank. In the preferred form the filter is a watertight container having a removable receptacle for retaining filtering material and is designed so that the receptacle can be easily removed to periodically change the filter material.

3,785,343
BIRD CAGE

Hilda E. Baratta, Hyde Park, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

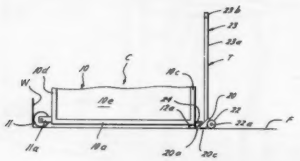
Filed Oct. 19, 1972, Ser. No. 298,927
Int. Cl. A01k *31/04*
U.S. Cl. 119—17 **1 Claim**



An improved bird cage, fabricated of transparent plastic material which provides separate connecting compartments for sleeping and bathing purposes of the caged bird. The sides and top of the bathing compartment and the sleeping com-

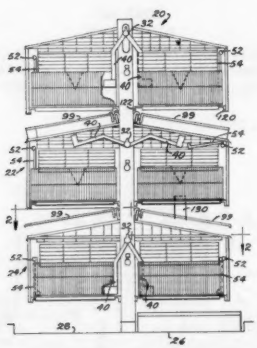
partment are formed of solid transparent plastic sheets, with each compartment being removable from the cage assembly, and with the openings in the main cage compartment to the bathing and sleeping compartments being closeable by a sliding door or grill. The base section of the cage is removable for cleaning purposes, and is located below a grill of plastic bars which may be fastened to, or removed from the cage independently of the removable base section.

3,785,344
CAGE APPARATUS
Carol M. Patterson, Bryan, Tex., assignor to Research Equipment Company, Inc., Bryan, Tex.
Filed Apr. 27, 1972, Ser. No. 248,111
Int. Cl. A01k *1/00*
U.S. Cl. 119—17 **8 Claims**



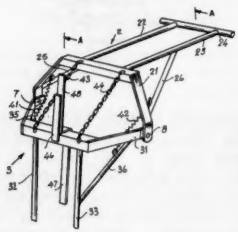
Cage apparatus for confining an animal within a cage and preventing undesired movement of the cage including an animal cage having wheels mounted at the rear thereof, resilient support means mounted at the front of the cage to support the cage and to provide reaction forces in substantially the opposite direction from forces exerted by the animal in the cage such that the cage tends to move in substantially one direction only; and, transport means for connecting to the front end of the cage to render the cage transportable.

3,785,345
AUTOMATED SYSTEMS FOR RAISING AND TRANSPORTING BROILERS
Vance E. Rhinehart, Apison; James D. Coffelt, Soddy, and Floyd G. Yother, Daisy, all of Tenn., assignors to Cumberland Corporation, Chattanooga, Tenn.
Filed Feb. 2, 1972, Ser. No. 222,821
Int. Cl. A01k *31/00*
U.S. Cl. 119—18 **17 Claims**



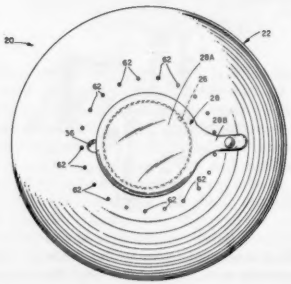
An animal raising system, particularly for fowl such as chickens, which includes a plurality of cages disposed on a frame in a plurality of rows, one row above the other. Each cage preferably has two members attached to opposing cage walls at the top thereof and movable from a first position in which the members provide a vertical extension of the walls to which they are attached, thus permitting proper grow-out and leaving the cage top open, to a second position closing the cage top for transportation at an appropriate cage height. Further, drop tubes for food and water extend into each cage through the open top and are pivotable out of the cage about a trough and water line to which they are respectively attached. The cage tops in at least one row are closed by a dropping collecting board which also collects droppings from the row of cages above. A scraper blade is movable along the board for periodically removing droppings and for pushing, with an attachment, the cages along the rails on which they rest for transportation.

3,785,346
STALLS FOR ANIMALS AND GATE ASSEMBLIES THEREFOR
James Dower, Kiladangan Dungarvan, Ireland
Filed Aug. 22, 1972, Ser. No. 282,685
Int. Cl. A01k *29/00*
U.S. Cl. 119—27 **7 Claims**



A gate assembly for fitting to a stall for animals, comprises inner and outer barrier elements which are movably mounted one behind the other at the entrance to the stall. Each barrier element is movable between an operative position in which it bars the entrance to the stall and an inoperative displaced position, and the operation of the barrier elements is so interrelated that one of the barrier elements is in the position in which it bars the entrance, when the other is in the inoperative position and vice-versa.

3,785,347
ANIMAL EXERCISING OBSERVATORY
Albert J. Dinnerstein, Brooklyn, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Mar. 23, 1972, Ser. No. 237,355
Int. Cl. A01k *29/00*
U.S. Cl. 119—29 **16 Claims**



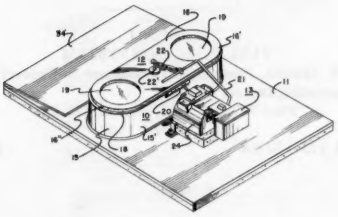
An animal exercising observatory which includes a hollow transparent sphere in which an animal may exercise for caus-

ing translatory rolling of the sphere along an external surface in contact therewith, the animal remaining continuously observable. The sphere includes a door which in contour is complemental to the sphere for permitting access into the latter.

3,785,348
AUTOMATIC PET FEEDER

Stanley J. Polidori, Sr., and Rockney A. Tope, both of P.O. Box 957, Holdersen, Nev.

Filed Sept. 20, 1972, Ser. No. 290,585
Int. Cl. A01k *05/00*
U.S. Cl. 119—62 **7 Claims**

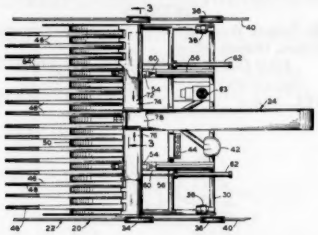


The automatic pet feeder comprises a base; a dish assembly having a dish-retaining body, dishes operable to be retained in the body, and a hingedly mounted lid; and a lid-actuating assembly having hinge drive means operable to raise and lower the lid away from the dishes, body, and control means to selectively activate the lid-actuating drive means.

3,785,349
LIVE POULTRY CATCHER

James E. Christopher, 3715 69th St., Lubbock, Tex.

Continuation of Ser. No. 48,921, June 18, 1970, abandoned, which is a continuation of Ser. No. 78,345, Dec. 5, 1968, abandoned. This application July 3, 1972, Ser. No. 268,571
Int. Cl. A01k *29/00*
U.S. Cl. 119—82 **17 Claims**

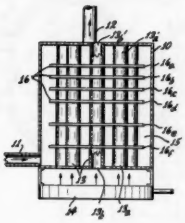


A live poultry catcher for collection of poultry in a poultry house. The poultry catcher is mounted upon wheels and is provided with extensible pickup bars, which extend horizontally under the chicken or other type of poultry. The pickup bars are adapted to be rotated upwardly with protective tip guards to lift the chickens and move them along a protective shield to deposit the chickens under a hood upon conveyor belts which feed the chickens onto a central conveyor belt. The central conveyor belt feeds the chickens in an extensible conveyor hood to deposit them into a collection crate. By means of the extensible accordion-type conveyor hood, the poultry catcher, which extends from one side wall to an opposite wall or divider fence in a chicken house, can be propelled to collect the chickens by means of the pickup bars where they are then conveyed to a collection coop or crate. The poultry catcher is operated by one attendant and can provide for complete collection of poultry with a minimum of labor.

3,785,350
HEAT TRANSFER APPARATUS

John McCormick, 1018 Beryl St., P.O. Box 9368, San Diego, Calif.

Filed Aug. 4, 1972, Ser. No. 278,045
Int. Cl. F22b *9/04*
U.S. Cl. 122—115 **4 Claims**

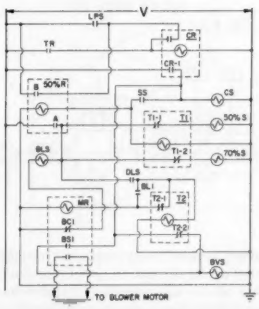


A heat transfer apparatus or steam boiler wherein a closed vessel of reinforced pressure resisting construction is provided with intake means for fluid or water, and exit means for heated fluid or steam. Passing through the interior of the vessel but forming a completely independent set of passages is a series of channels for intake of heat via fire, hot liquid or other means. The channels pass through and within the interior of the vessel and are physically connected to fins which extend through the interior. The fins are more closely spaced at the top and wider spaced at the bottom of the vessel. The fluid or water intake means may be provided with means to convert the fluid intake into a fine spray within the vessel. Thus a highly efficient rate of heat transfer is provided from heat source to the internally injected fluid in a relatively small vessel area suitable for small volume engines as for personal automotive vehicles and the like.

3,785,351
SOOT CLEANING METHOD

Ralph J. Hall, 161 Hoyle St., Marion, N.C.

Filed Oct. 13, 1972, Ser. No. 297,215
Int. Cl. F22b *37/48*
U.S. Cl. 122—379 **5 Claims**



Method of cleaning soot particles from heat transfer surfaces in a boiler automatically and at predetermined intervals without the need of manual supervision.

3,785,352

ROTARY PISTON INTERNAL COMBUSTION ENGINE

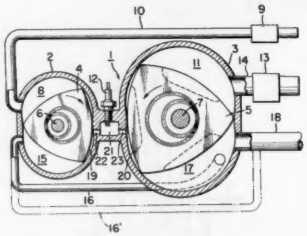
Tasuku Date, Tokyo, and Junji Otani, Omiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 292,167

Claims priority, application Japan, Sept. 29, 1971, 46-75388

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.13 4 Claims



A rotary piston engine that can operate efficiently wit' a lean fuel-air mixture, producing clean exhaust gases. It includes two rotors arranged in respective cavities and an ignition chamber arranged in communication with the combustion chambers defined in said respective cavities. A richer mixture is fed in one of the two combustion chambers than in the other and compressed to a higher extent so that the ignition chamber is filled with such mixture and the combustion flame formed therein is used to ignite the lean mixture fed in the other, major combustion chamber.

3,785,353

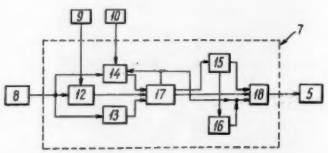
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Jury Modestovich Borisov, annikov prospekt, 21, korpus 1; Jury Ivanovich Budyko, ulitsa Petropavlovskaya, 8, kv. 66; Nikolai Borisovich Dubnitsky, ulitsa Vosstania, 19, kv. 6; Valentin Eizerovich Koganer, ulitsa Strelbischenskaya, 26, kv. 35; Alexandr Ivanovich Lisitsyn, ulitsa Sofiliskaya, 32, korpus 2, kv. 112, all of Leningrad; Nikolai Gavrilovich Mozokhin, ulitsa Avtomobilnaya, 16, kv. 16; Konstantin Mikhailovich Masenskov, ploschad Maxima Gorkago, 5, kv. 33, both of Gorky, and Jury Vasilievich Dukhnin, Leningradskoe shosse, 63, kv. 6, Poselok Strelna Leningradskoi Oblasti, all of U.S.S.R.

Filed Mar. 31, 1972, Ser. No. 240,076

Int. Cl. F02b *1/02*

U.S. Cl. 123—32 EA 3 Claims



The proposed system comprises electromagnetic injectors feeding the fuel cyclically into the inlet manifold of the engine. The operation of the injectors is controlled by an electronic device having at least three driven multivibrators.

One multivibrator receives the signals from the engine speed transducer and from the pressure transducer responding to the air pressure in the inlet manifold of the engine and shaping pulses whose repetition frequency depends on the speed of the engine and whose duration depends on the pressure in the inlet manifold.

The second multivibrator receiving the signals from the engine speed transducer shapes pedestal pulses of a specified duration in synchronism with the engine speed.

The durations of the pulses of the first and second multivibrators are compared, and a signal is produced which triggers the third multivibrator when the duration of the pulse of the first multivibrator exceeds the duration of the pulse of the second multivibrator.

This provides for a jumpy change in the characteristic of the pulses controlling the injectors without using electromechanical transducers operating when shifting the engine to full-power operation and when cutting off the fuel supply.

3,785,354

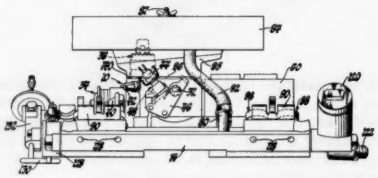
FUEL INJECTION SYSTEM

John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1972, Ser. No. 227,461

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA 2 Claims



In an electronically controlled fuel injection system, the electronic package is mounted on a finned heat dissipating pad extending horizontally from the air inlet body whereby heat generated during operation of the electronic package may be dissipated through the fins to the atmosphere and to the air flow through the air inlet body.

3,785,355

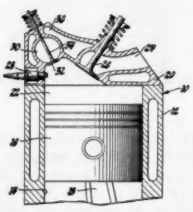
ENGINE WITH INTERNAL CHARGE DILUTION AND METHOD

Richard R. Toepel, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1973, Ser. No. 337,376

Int. Cl. F02b *33/00*, *75/02*; F02d *39/02*

U.S. Cl. 123—119 A 4 Claims



In a preferred embodiment, a spark-ignited internal combustion engine is provided with a valved receiver chamber connected with the combustion chamber adjacent the spark plug. The receiver valve is open at peak combustion pressures to admit combustion chamber gases which are retained in the receiver until discharged to the combustion chamber after ignition of the charge on the following cycle. The arrangement and method provide substantial combustion chamber charge

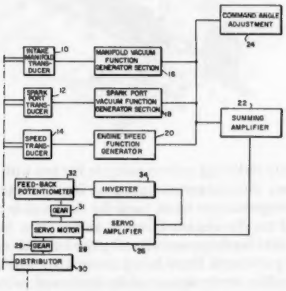
dilution for limiting nitrogen oxide emissions without adversely affecting ignition of the air-fuel mixture.

3,785,356

ELECTRONICALLY CONTROLLED IGNITION SYSTEM

Donald E. Niemoeller, Lafayette, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 15, 1971, Ser. No. 198,598
Int. Cl. F02p *5/04*
U.S. Cl. 123—148 E **10 Claims**



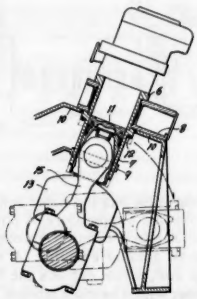
An electronically controlled ignition system for controlling the ignition timing of an internal combustion engine for accordance with engine speed and load. Three linear transducers convert the engine speed, the amount of intake manifold vacuum and the amount of carburetor spark port vacuum into electrical voltages. Three corresponding non-linear function generators generate predeterminable output voltages in accordance with the transducer output voltages. The aggregate of the generator output voltages is taken and used to alter the ignition timing angle of the engine. Any error between the actual alteration and the alteration signalled for is detected by a feedback potentiometer and used to further adjust the ignition timing in accordance therewith.

3,785,357

CYLINDER CONSTRUCTION FOR TRUNK PISTON ENGINE

Takeo Okazaki, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Apr. 12, 1972, Ser. No. 243,127
Claims priority, application Japan, May 31, 1971, 46-38105
Int. Cl. F02f *7/00*
U.S. Cl. 123—195 R **3 Claims**



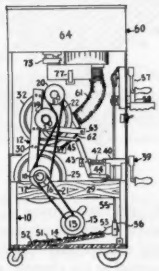
Cylinder construction for easily taking out the piston from the engine characterized by that the each cylinder liner can be removed in the crankcase and each piston can be rotated in the crankcase together with the connecting rod to a suitable position where the piston is taken from the engine.

3,785,358

TENNIS BALL PROPELLING MACHINE

Thomas J. D'Angelo; William H. Strohmeyer, and John K. Ulbrich, all of San Antonio, Tex., assignors to Meyer Machine Company, San Antonio, Tex.

Filed Jan. 17, 1972, Ser. No. 218,178
Int. Cl. F41b *3/04*
U.S. Cl. 124—1 **8 Claims**



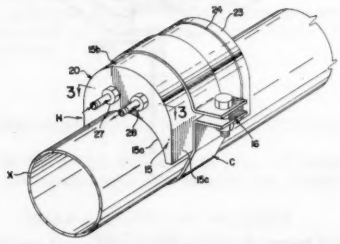
A device employing motor driven variable speed drive means rotating two spaced propelling wheels rotating in opposite direction. Balls are fed into the ball propelling wheel assembly through a hopper incorporating an agitating carrousel with an auxiliary ball agitator. A speed drive with a split drive pulley varies the rate of rotation of the carrousel and the rate of delivery of the tennis balls through a tube to a ball feed guide, first positioning the balls in contact with the upper ball propelling wheel then into the ball propelling space. The angle of projection is regulated by adjustably varying the angle of the ball wheel arm. The device is normally electric powered incorporating remote control cables, a wheel mounted cabinet is desirable for mobility.

3,785,359

WINDSHIELD WASH WATER HEATER

Thomas H. Whittaker, 9114 Olde Eight, Northfield, Ohio

Filed Mar. 28, 1970, Ser. No. 238,850
Int. Cl. F24b *1/00*
U.S. Cl. 126—19.5 **5 Claims**



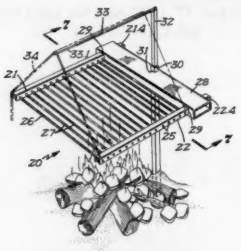
For inclusion on the line between the wash liquid supply and the discharge jets of an automotive vehicle windshield wash liquid pumping system, a liquid heater secured on the engine exhaust pipe, comprising a pipe-embracing saddle-shaped metal body with a cavity forming a liquid heating flow space provided with line connector nipples.

3,785,360

DEMOUNTABLE CAMP GRILL

Edward J. Martin, 4909 Fremont Ave., Minneapolis, Minn.

Filed Jan. 3, 1972, Ser. No. 214,658
Int. Cl. A47j 37/00; F24b 3/00; F24c 1/16
U.S. Cl. 126—30 12 Claims



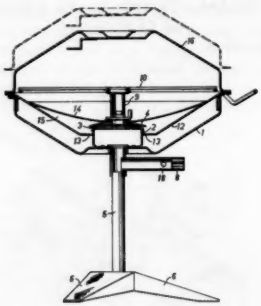
A demountable grill for use over a cooking fire and including support channels retained against separation and having grill rods insertable transversely through one channel in holes aligned but not normal to the channel and into the other channel; additional rods or support structure binding the channels to be relatively fixed, and a demountable and extendible horizontal rod spaced above the grill for supporting a reflector media to concentrate reflected heat upon items on the grill.

3,785,361

GAS BURNER DEVICE FOR FOOD GRILLING

Carl-Anker Mejyr, and Lars Eric Ledin, both of Sundbyberg, Sweden, assignors to Primus-Sievert AB, Vretenvagen, Solna, Sweden

Filed Oct. 4, 1972, Ser. No. 294,831
Claims priority, application Sweden, Oct. 15, 1971, 13094/71
Int. Cl. A47j 37/00
U.S. Cl. 126—41 R 3 Claims



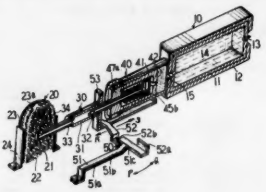
A gas burner device for food grilling and operating with LNG, said device comprising a burner body mounted on a vertical axis in a casing, which is cupshaped and open upwardly and which supports a grill grate, said device further comprising a flame holder device consisting of a flame holder wall extending from below the burner gas discharge openings and towards the casing periphery and an apertured flame holder screen located above said burner body but below the grill grate.

3,785,362

RADIATING SYSTEM FOR BODY WARMING DEVICES

Sakujiro Okui, Kyoto, Japan, assignor to Kodama Brothers Co., Ltd., Kaiso-gun, Wakayama-ken, Japan

Filed May 10, 1972, Ser. No. 251,905
Int. Cl. A61f 7/06
U.S. Cl. 126—208 11 Claims



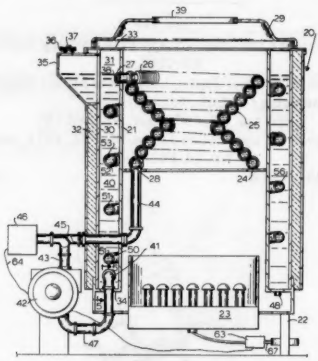
In a safety radiating system suitable for use with body warming devices, the system comprises a fuel storage tank which contains liquefied gas to be used for fuel and is adiabatically connected to the system through means of a heat-resisting, adiabatic fuel feeding pipe whereby the heat developed by the system is prevented from being conducted to the tank. The system further comprises a safety appliance provided with a bimetallic actuator adapted to thermostatically stop the radiating action of the system once over-heating takes place.

3,785,363

CLEANING APPARATUS FOR AUTOMOBILES WITH INDIRECT HEAT EXCHANGE FOR HEATING THE CLEANING FLUID

Joseph G. Machado, 3447 Railroad Ave., Ceres, Calif.

Continuation-in-part of Ser. No. 88,818, Nov. 12, 1970, abandoned. This application Apr. 7, 1972, Ser. No. 242,096
Int. Cl. F24h 1/12
U.S. Cl. 126—350 R 7 Claims



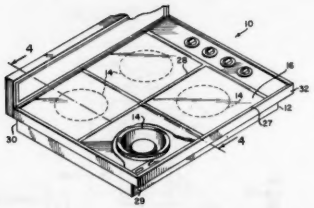
A cleaning apparatus for heating water and for delivering it at a substantially constant temperature. A pump circulates an intermediate or heat-transfer liquid through a first heat-exchange coil and an annular chamber. A burner heats the first heat-exchange coil, which delivers the hot heat-transfer liquid to the chamber with a swirling motion. The water to be heated is sent through a second heat-exchange coil in the annular chamber where it is heated by the heat-exchange liquid, giving a very good control for maintaining even temperatures. Detergent may then be injected, if desired, into the hot water.

3,785,364

SMOOTH TOP RANGE

Edward A. Reid, Jr.; Robert G. Venendaal, and George W. Myler, all of Columbus, Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Filed June 5, 1972, Ser. No. 259,778
Int. Cl. F24c 3/04
U.S. Cl. 126—39 J 18 Claims



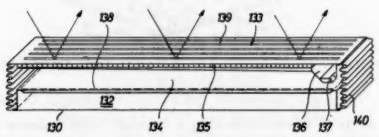
In a smooth top gas range including a shell construction defining an open top, a plate of heat resistant glass material closes the top of the shell to enclose a plurality of gas burner units therein. An air-impervious plate separates the shell into upper and lower air flow chambers and means is provided in the upper chamber to confine the products of combustion formed by each of the burners and isolate them from the upper chamber. The confining means serves to direct the products of combustion into the lower chamber of the shell construction which communicates with the atmosphere through an opening in the shell, so that the lower chamber defines a common exhaust for the products of combustion formed in each of the burner units. A blower is provided for drawing air into the upper chamber of the shell construction in order to cool the smooth top heat resistant plate during operation of the range and discharges this air into the lower chamber in order to dilute the products of combustion therein prior to their being discharged from the shell.

3,785,365

TEMPERATURE CONDITIONING MEANS

Ingeborg Laing, and Nikolaus Laing, both of Hofener Weg 35-37, Stuttgart, Germany

Division of Ser. No. 830,457, June 4, 1969, Pat. No. 3,720,198. This application Feb. 26, 1973, Ser. No. 335,771
Claims priority, application Austria, Jan. 8, 1969, A121/69
Int. Cl. F24h 7/06
U.S. Cl. 126—400 26 Claims



A temperature conditioning device for controlling temperature in a room where said device has a heat source wall, a heat sink wall, and a chamber between the walls adapted to be filled with a saturated vapor of a low boiling point heat carrier whereby the vapor of the condensate serves to transfer heat between the walls. A temperature responsive condensate control valve may be included to control flow of condensate of the heat carrier from one wall on which it may condense to the other wall on which it vaporizes such that the valve serves to regulate transfer of heat between the walls.

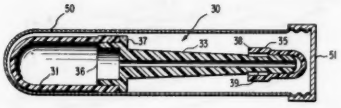
A method of charging a temperature conditioning device with a low boiling point heat carrier which includes cooling the device, evacuating a chamber in the device, and then injecting in liquid form a low boiling point heat carrier into the chamber.

3,785,366

METHOD AND APPARATUS FOR DISEASE DIAGNOSIS

Hugh J. Davis, 507 Castle St., Baltimore, Md.

Continuation of Ser. No. 199,373, June 1, 1962, abandoned. This application Dec. 19, 1968, Ser. No. 805,064
Claims priority, application Great Britain, June 5, 1961, 20197/61
Int. Cl. A61b 10/00
U.S. Cl. 128—2 B 34 Claims



A process and apparatus for procuring and processing cellular material, particularly for use in disease detection from body cavities in which a self-contained pipette structure is used for irrigating the body cavity with a solution, re-aspirating the solution with the samples to be collected; shipping the thus-obtained samples of cellular material to a laboratory and recovering at the laboratory by means of the pipette structure specimens of cellular material for purposes of analysis.

3,785,367

ARTERIAL BLOOD SAMPLER

Robert F. Fortin, Santa Paula, and Larry A. Sims, Hermosa Beach, both of Calif., assignors to Pharmasel Division of American Hospital Supply Corporation, Glendale, Calif.

Filed Mar. 13, 1972, Ser. No. 234,267
Int. Cl. A61b 5/14
U.S. Cl. 128—2 F 14 Claims

A blood sampler with an arterial needle and a collapsed flexible blood pouch that snaps into inflated condition with arterial blood pressure but not with venous blood pressure. This provides a visual indication that an artery and not a vein has been punctured.

3,785,368

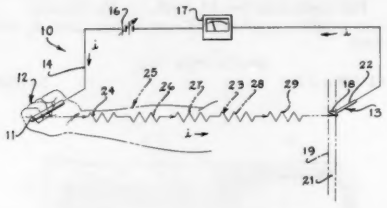
ABNORMAL NERVE PRESSURE LOCUS DETECTOR AND METHOD

Thomas M. McCarthy, 940 Linden Dr., No. 130, Sunnyvale, Calif., and Dale R. Lumb, 1054 Bluebird Ave., Santa Clara, Calif.

Filed Aug. 23, 1971, Ser. No. 173,935
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1 Z 5 Claims

A system, device and method for readily detecting the locus of a subluxated or pinched nerve along the spinal column and particularly for identifying which particular pair of vertebrae are pressing upon a pinched nerve has been disclosed so that a medical person can relieve the pressure as by adjusting alignment of one of the pair of vertebrae. A T-shaped scanning probe is employed to explore along the regions directly over

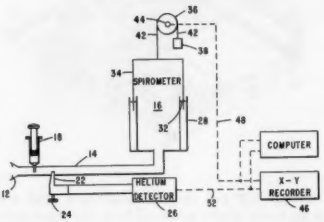
and also flanking the spinal column while another probe is held tightly in the patient's hand whereby a low voltage circuit can be provided which develops fluctuations in a meter reading the current or voltage through the circuit as the T-shaped probe is drawn along the back of the patient. A method for detecting nerve root pressure subluxations of the body of a patient in the regions of the spinal column in a manner which identifies the locus of the subluxation comprises a number of manipulative steps characterized by drawing the cross-piece of the probe along the back of the patient while directing the current in the circuit to emerge from the back of the patient into the T-shaped probe.



3,785,369
BUST-DEVELOPING MEANS
L. Dee Tallent, P.O. Box 136, Cabazon, Calif.
Filed Nov. 1, 1972, Ser. No. 302,845
Int. Cl. A61h *1/00*
U.S. Cl. 128—40 **10 Claims**

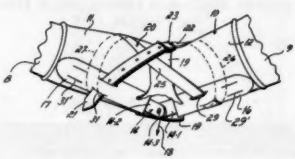
A bust developing brassiere having a pair of cups made from a stiff, semi-rigid plastic fitted with rims of a relatively soft, rubbery character, adapted to fit snugly against the chest, around the breasts, and seal the cups against substantial leakage of air when the brassiere is worn. Each of the cups has an opening in its upper side, and the opening is covered by a small piece of thin resilient material partially attached to the cup above the opening, so that the piece of material lies naturally over the opening unless forced out of this position by air pressure within the cup. The brassiere is fitted with straps over the shoulders and around the back so that it can be worn in the same way as a conventional brassiere. The brassiere cups should be sufficiently large to hold the wearer's breasts with a certain amount of room left over. When the brassiere is worn, the natural breathing of the wearer creates a massage action on the breasts. Thus, when the wearer breathes in, her chest expands and pushes some of the air out of the cups through the upper openings covered by the resilient flaps. When the wearer breathes out, her chest contracts, and the air pressure on the outside of the cups holds the flaps in position over the openings. The flaps are not held tightly over the openings, however, so that some air leaks into the cups, to repressurize them, as the wearer is breathing outward.

3,785,370
DETECTION OF IMPAIRED PULMONARY FUNCTION
Powell Richards, Bayport; Herbert Susskind, Huntington, and Louis G. Stang, Jr., Sayville, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Sept. 14, 1972, Ser. No. 289,204
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **3 Claims**



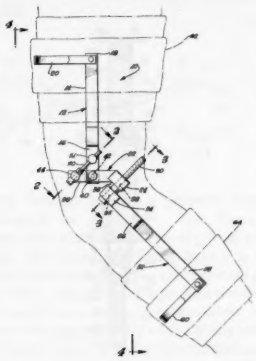
A non-radioactive tracer technique for detecting the presence of impaired pulmonary function indicating disease of the small airways at a much earlier stage than is permitted by previously used techniques, which non-radioactive technique involves the introduction of a bolus of helium at residual volume and the measurement of the concentration of helium in the expirate. The point in vital capacity where the helium concentration in the expirate increases sharply above the alveolar plateau indicates the state of pulmonary function.

3,785,371
ELBOW SLEEVE
Hector E. Lewis, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed July 26, 1972, Ser. No. 275,143
Int. Cl. A61f *5/10*
U.S. Cl. 128—77 **3 Claims**



A surgical device including a tubular, elastic sleeve configured to snugly embrace the elbow region of the wearer and a portion of the forearm and upper arm extending therefrom, a pair of hinges secured to opposite sides of the sleeve with the hinge pins of each lying along an imaginary line defining the bending axis of the elbow, a first strap lying exteriorly of the sleeve along the elbow crease and secured at its opposite ends to the hinges for restricting the pinned portions of the hinges from moving rearwardly away from the elbow crease when the elbow is bent, and a second strap encircling the upper and lower portions of the sleeve above and below the elbow which is configured in the form of a "figure-8" to facilitate, with the wearer's other hand, adjustably restricting the elbow against straightening motion beyond a selectively variable bent position.

3,785,372
EXTENSION DESUBLUXATION HINGE APPLIANCE
William A. Craig, P.O. Box 81, Angwin, Calif.
Filed Jan. 2, 1973, Ser. No. 320,082
Int. Cl. A61f 3/00
U.S. Cl. 128—80 C 2 Claims

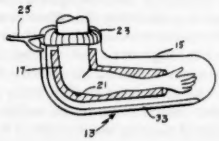


An improved hinge appliance having a pair of thigh bar members joined at their upper ends by a band and having a pair of leg bar members joined at their lower ends by a band, said thigh bar members being connected to said leg bar members by hinge bar members having one end formed into a block form and the other end formed into a shank member extending outwardly with means for controlling the extension of the hinge appliance.

3,785,373
PLASTER OF PARIS BANDAGES TO MAKE WATER-RESISTANT CASTS
David F. Smith, 60 Longview Dr., Sarasota, Fla.
Continuation-in-part of Ser. No. 42,446, June 1, 1970, Pat. No. 3,649,319. This application Aug. 20, 1970, Ser. No. 65,732
Int. Cl. A61f 05/04
U.S. Cl. 128—91 6 Claims

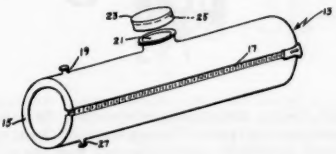
A method of forming an orthopedic case-forming bandage is disclosed. The bandaged formulation contains plaster of Paris in combination with polyvinylpyrrolidone, set accelerators, and bonding agent uniformly spread upon a backing material to yield a cast-forming bandage having increased water resistance and a weight between 38 and 48 grams per square foot.

3,785,374
SEALABLE CONTAINER FOR LIQUID FLOTATION OF CAST-BOUND LIMBS
Herbert G. Lipson, 68 Aldrich Rd., Wakefield, Mass.
Filed July 13, 1972, Ser. No. 271,334
Int. Cl. A61f 13/00
U.S. Cl. 128—82 5 Claims



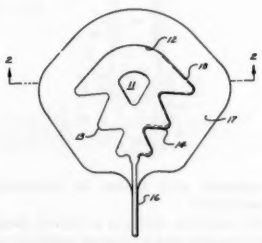
An elongated, waterproof, flexible bag having an opening at one end through which a cast-bound limb is inserted and sealing means around the opening including an inflatable cuff of substantially toroidal configuration and sufficiently wide to distribute the sealing pressure over a large enough area to prevent interference with the blood supply to the injured limb when the cuff is inflated. Longitudinally oriented flotation sections may be disposed in the wall of the bag to further aid in buoying up the cast-bound limb while swimming and/or for therapeutic water treatments.

3,785,375
TEMPORARY INFLATABLE CAST
Herbert G. Lipson, 68 Aldrich Rd., Wakefield, Mass.
Filed July 13, 1972, Ser. No. 271,466
Int. Cl. A61f 5/01
U.S. Cl. 128—82.1 5 Claims



An inflatable cast for application over the injured limb of the wearer including a hollow, elongated, flexible member shaped to enclose the injured limb. After the limb is in position a releasable securing means along the longitudinal edges is closed and the cast is inflated by filling with air. A sealable opening is provided in the cast for introduction of a cooling medium prior to inflation when desired.

3,785,376
INTRAUTERINE DEVICE
Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Emeryville, Calif.
Filed Nov. 3, 1971, Ser. No. 195,300
Int. Cl. A61f 5/46
U.S. Cl. 128—130 4 Claims

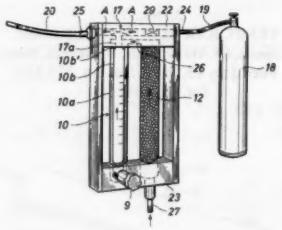


An intrauterine device has an inflatable envelope of thin, flexible, substantially non-stretchable material. A skirt of a single thickness of thin, flexible material extends outwardly from the periphery of the envelope for from one-half to one centimeter and substantially all around the envelope.

3,785,377
PLANT, PREFERABLY FOR ANAESTHESIA
Soren Jorgensen, Odense Sygehus, Sonder Boulevard 29, Odense, Denmark
Filed Nov. 9, 1971, Ser. No. 197,001
Claims priority, application Denmark, Nov. 12, 1970, 5753/70; Oct. 15, 1971, 5038/71
Int. Cl. A61m 17/00
U.S. Cl. 128—188 6 Claims

Anaesthetic gas is maintained in a closed system and exhausted in an area external to the area wherein the anaesthetic

equipment is operated according to the disclosed apparatus. The apparatus for administration of anaesthesia includes a controlled source of anaesthetic gas, a mask, check valves on either side of the mask, carbon dioxide absorber, rubber bag, and means for removal of circulated anaesthetic gas from the system. Inlet and outlet from the system may be conveniently



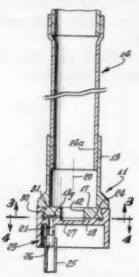
controlled thereby maintaining substantially the same pressure throughout the system. The apparatus disclosed provides that harmful anaesthetic gases exhausted from the system do not reach the ambient air surrounding the apparatus, thus the staff working in the area of the apparatus is protected from exposure to the gases.

3,785,378

FLOW CONTROL VALVE FOR INTRAVENOUS FLUIDS

Calvin R. Stewart, 471 W. Duarte Rd., Apt. 226, Arcadia, Calif.

Filed Apr. 6, 1972, Ser. No. 241,712
Int. Cl. A61m *5/16*
U.S. Cl. 128—214 C **8 Claims**



A valve operable with means to administer fluid intravenously comprises:

a. an annular member forming a central passage through which fluid is flowable and having an end face with multiple grooves therein, the grooves having inner ends communicating with said passage and being generally circularly spaced, the grooves extending outwardly relative to said passage and having different cross sectional areas, and

b. a flow control member having an end face relatively rotatable adjacent said annular member end face, the control member having a flow port successively and selectively communicating with said grooves in response to said relative rotation, said port adapted to pass fluid to administration tubing.

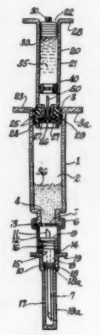
3,785,379

SYRINGE FOR INJECTION OF FRESHLY MIXED LIQUID-POWDER

Milton J. Cohen, 7111 Connecticut Ave., Chevy Chase, Md.

Filed Aug. 12, 1971, Ser. No. 171,207
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 M **12 Claims**

A syringe formed of an inner tubular member adapted to contain a liquid carrier and an outer tubular member adapted to contain a dry medicament to be taken up with the carrier for injection whereby the materials are freshly mixed immediately prior to injection and wherein the dry medicament and liquid carrier are separably maintained in sealed relation one from the other until admixed immediately prior to injection, whereby the sealing means between said inner and outer



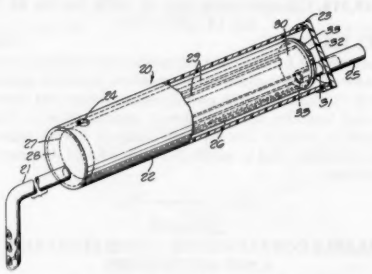
tubular members comprises a sealing ring of flexible material within said inner tubular member in sliding engagement with the inner walls thereof and a needle assembly supported at the forward end of the inner tubular member, the forward end of the needle of the needle assembly terminating a short distance from the sealing ring prior to admixture and the needle piercing through said sealing ring when in position of admixture.

3,785,380

FILTERING BLOOD SUCKER

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif.

Filed Feb. 22, 1972, Ser. No. 228,033
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **8 Claims**



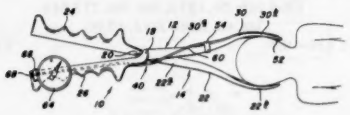
A blood sucker is connected to the suction side of a peristaltic tube pump, evacuating blood lost by a patient at a surgical site. The air evacuated through the blood sucker when in use can be filtered through a first disposable micropore filter in the sucker, prior to contacting the blood evacuated from the surgical site. The patient blood, clean air and surgical debris are also filtered through a sucker second disposable filter, whose pore apertures are sized to remove the tissue debris from the blood flowing into the sucker. Early removal of tissue debris from patient blood in the blood sucker can slow the initiation of the blood clotting mechanism. The filtered air can decrease the microscopic air contaminants in the filtered blood, which can then be returned to the patient's circulatory system. An integral plurality of flexible, parallel array blood conductive tubing provide wall stabilized, low turbulence blood flow from the sucker to a cardiotomy reservoir or the like, prior to returning the blood to the patient's circulation.

3,785,381

PRESSURE SENSING OBSTETRICAL FORCEPS

Brenton R. Lower; Kenneth E. Hughes, both of Columbus, Ohio, and Leonard E. Laufe, Pittsburgh, Pa., assignors to Leonard E. Laufe, Pittsburgh, Pa.

Filed Jan. 22, 1973, Ser. No. 325,502
Int. Cl. G01n 3/48; A61b 17/44; A61d 1/08; G01b 5/00
U.S. Cl. 128—323 14 Claims



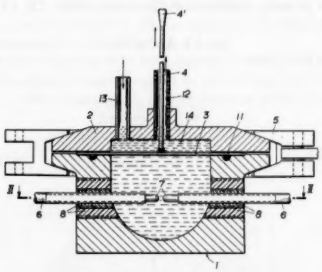
An obstetrical forceps having a pressure sensing device combined therewith is disclosed. The forceps include pivotably connectable blades, each having fetal engaging and handle portions. The pressure sensing device is constructed and arranged on the forceps to sense and indicate pressure applied to a fetus when using the forceps. The device includes a pressure sensor such as a deflectable diaphram arranged on the tip of the fetal engaging portion of the blade and a pressure indicator communicating with the diaphram through tubing or the like. The tubing is filled with an incompressible fluid, such as distilled water. When the sensor deflects as pressure is applied to a fetus, the pressure will be transmitted by the water through the tubing to the indicator.

3,785,382

DEVICE FOR DESTROYING STONES IN THE BLADDER, IN THE URETER, IN THE KIDNEYS AND THE LIKE

Heinz Schmidt-Kloiber, and Stefan Schuy, both of Graz, Austria, assignors to Richard Wolf GmbH, Knittlingen/Wurtt, Germany

Filed May 12, 1972, Ser. No. 252,752
Claims priority, application Austria, May 14, 1971, A 4187/71
Int. Cl. A61b 17/22
U.S. Cl. 128—328 3 Claims



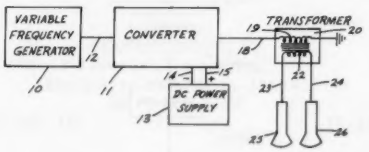
A device for destroying stones in the bladder, in the ureter, in the kidneys and the like, comprising an elongated, flexible lithotriptor insertable in conjunction with a cystoscope or a special catheter through the urethra into the interior of the body until such time when it comes into contact with the stone to be destroyed, a driving mechanism comprising a chamber filled with a liquid, a membrane closing the chamber and rigidly connected to the lithotriptor, and imparting longitudinal mechanical vibrations to same two electrodes inserted in the chamber in such a manner as to provide electrical insulation, and a means which makes electric flashovers between the electrodes possible inside the chamber.

3,785,383

ELECTROSTATIC WAND

Gianni A. Dotto, Dayton, Ohio, assignor to Alfred A. Anglemyer, Dayton, Ohio

Filed Mar. 29, 1971, Ser. No. 128,813
Int. Cl. A61n 1/06
U.S. Cl. 128—414 4 Claims



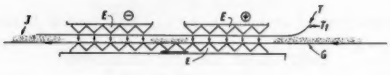
Electrostatic means radiating electrical energy at selected frequencies of the order of megacycles per second is safely and harmlessly coupled capacitively to tissue structure of a human being or of an animal with no significant flow of electrons for reducing sensitivity to pain, at least temporarily. The radiating means may comprise an evacuated glass envelope containing a selected atmosphere of inert gas and also containing an electrode that is intermittently subjected to an electropositive voltage during certain portions of the cycle to promote positive space charges within the envelope together with a controlled amount of ionization of said atmosphere and the production of selected forms of electromagnetic radiation such as infra red light, ultra violet light, visible light, and mixtures thereof.

3,785,384

METHOD OF TREATING TOBACCO

Herbert A. Sylvester, Basildon; Christopher M. Partridge, Canvey Island, and Ira D. Goss, Rayleigh, all of England, assignors to Carreras Rothmans Limited, Essex, England

Filed Nov. 8, 1971, Ser. No. 196,652
Int. Cl. A24b 3/18
U.S. Cl. 131—121 19 Claims



A method of treating tobacco to cause its cellular structure to expand and/or to cause the fibres to move apart from one another which includes passing it through a high frequency field on a conveyor and beneath an overlying static sheet.

3,785,385

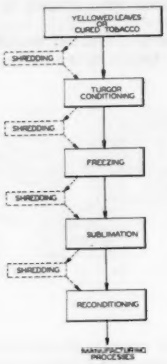
TOBACCO TREATMENT TO INCREASE VOLUME THEREOF

William H. Johnson, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Filed Feb. 21, 1968, Ser. No. 707,064
Int. Cl. A24b 3/18, 15/00
U.S. Cl. 131—140 P 4 Claims

Substantial increases in the specific volume of tobacco and other improvements of the properties thereof may be obtained by bringing the tobacco before, during or after curing to a condition of high turgidity and subjecting the turgid tobacco to low pressure sublimation of the water content thereof from

the frozen condition. The tobacco may be shredded at any stage of the process before or after the low pressure sublima-



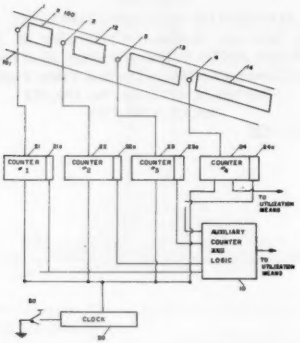
tion. The product typically has a specific volume at least twice that of air dried tobacco of the same moisture content.

3,785,386

SORTING AND COUNTING APPARATUS

Harvey Irwin Kofsky, 3250 Ellendale Ave., Apt. 504, Montreal, Canada

Filed June 12, 1972, Ser. No. 261,797
Claims priority, application Canada, June 17, 1971, 115938
Int. Cl. G07d *3/16*
U.S. Cl. 133—3 D **4 Claims**



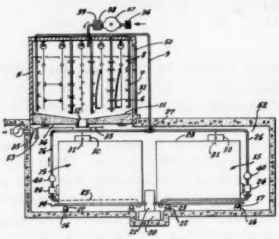
The invention relates to a novel apparatus for sorting and counting objects of different sizes and is especially applicable to the sorting of coins and to providing a money value readout of the sorted coins. In accordance with the invention, the coins are simultaneously counted and sorted by providing a channel along which the coins are directed, the channel comprising n predetermined detection points (where n is equal to the number of different sizes) with (n-1) sized exits, each exit being between two adjacent detection points. An nth exit is provided after the nth detection point. The exits are arranged such that the smallest sized exit appears at the head of the channel, the exit sizes increasing in size to the foot of the channel. Each coin which passes a detection point is detected and counted, and in order to determine the number of one type of coins, i.e., the number of coins which have exited at the ith (i−1 to n) exit, the number of coins detected at the (i+1)th exit is subtracted from the number of coins detected at the ith exit. The number of largest size coins is determined directly by the count on the nth detector point. In accordance with a preferred embodiment of the invention, the detector points comprise photoelectric devices.

3,785,387

CHEMICAL PROCESSING FACILITY

Francis D. Ross, Long Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed July 20, 1972, Ser. No. 273,546
Int. Cl. B08b *3/02, 15/00*
U.S. Cl. 134—95 **8 Claims**



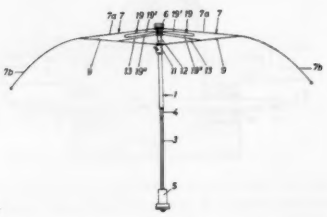
A hermetically sealed booth enclosing a quantity of parts to be chemically processed, and tanks containing the various chemical solutions being positioned below the parts booth and sequentially movable to positions below the booth whereby the solution in a single tank is pumped into the booth, sprayed over the parts and returned to the tank through a drain opening in the floor of the booth. All fumes and contaminants emanating from the solutions are passed through filters or air washers before being exhausted to atmosphere.

3,785,388

TELESCOPIC UMBRELLA

Josef Schafer, Solingen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Oct. 26, 1972, Ser. No. 301,061
Claims priority, application Germany, Sept. 21, 1972, P 22 46 238.0
Int. Cl. A45b *19/00*
U.S. Cl. 135—20 R **5 Claims**



The umbrella has a frame with a telescopic stick and telescopic dome ribs. At least one runner is provided for sliding movement on the stick and mounts support members for opening and closing the dome ribs, and the runner is in a position adjacent the crown of the umbrella when the umbrella is in a closed collapsed position. Foldable spokes are hinged to the crown and to the runner such that when the umbrella is being collapsed, the spokes fold and expand outwardly normal to the axis of the stick so as to spread out the mushroom being formed by the cover material as the umbrella is being collapsed.

3,785,389

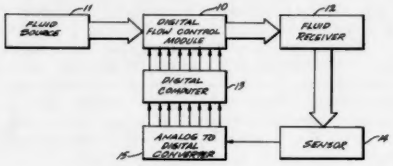
FLUID FLOW CONTROL SYSTEM

Harry Friedland, and Addison W. Langill, both of Salt Lake City, Utah, assignors to Process Systems, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 142,681, May 12, 1971, abandoned. This application Aug. 9, 1971, Ser. No. 169,930

Int. Cl. E03b *1/00*; **F17d** *1/00*; **F15c** *1/12*

U.S. Cl. 137—1 **19 Claims**



A plurality of individually actuatable, bistable digital valve elements interconnect an upstream manifold and a downstream manifold. Each valve element has a first orifice with an adjustable cross-sectional area, and a second orifice with a fixed cross-sectional area substantially larger than that of the first orifice. A bistable plug seals the second orifice in one state and clears the second orifice for fluid flow in the other state. The flow rate through the valve element is determined by the area of the first orifice, which comprises a cylindrical passage and an axially movable, tapered slug lying within the passage. The slug is integral with an externally exposed set screw that adjusts the first orifice area. The axis of the slug and screw are transverse to the direction of plug movement. The first orifice is located upstream of the second orifice near the inlet of the valve element. The individual valve elements are removably attached to a main block that houses the upstream and downstream manifold to form a module. A multicomponent mixing system is assembled by coupling the downstream and/or upstream manifolds of different modules to a central mixing block in which the interconnecting conduits and manifolds are formed.

3,785,390

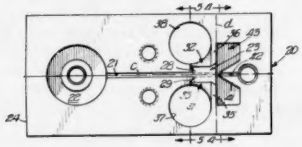
PURE FLUID AMPLIFIER

Wesley L. Taylor, Glenview, Ill., assignor to The Powers Regulator Company, Skokie, Ill.

Division of Ser. No. 631,108, March 9, 1967, Pat. No. 3,545,675, which is a continuation-in-part of Ser. No. 571,829, Aug. 11, 1966, abandoned. This application July 27, 1970, Ser. No. 64,885

Int. Cl. F15c *1/14*, *1/18*

U.S. Cl. 137—13 **31 Claims**



A pure fluid amplifier which projects a laminar power stream and includes a control section for developing a pressure differential across the projected laminar power stream for a substantial portion of the length of the power stream (preferably a portion of the length of the power stream at least equal to four times the width of the power stream emission orifice) so as to angularly displace the power stream while maintaining the power stream laminar at all points in advance of the receiver aperture. Preferably, there is a venting region immediately in advance of the receiver aperture which is relieved in all directions in a plane perpendicular to the plane of angular displacement. A system for biasing the laminar deflector (or other pressure-operated pure fluid amplifier) by aspirating fluid from the control section in a quantity substantially equal to the quiescent input flow to the amplifier. A unit ventilator control using a laminar deflector is shown. A proportional controller using a biased laminar deflector is shown.

3,785,391

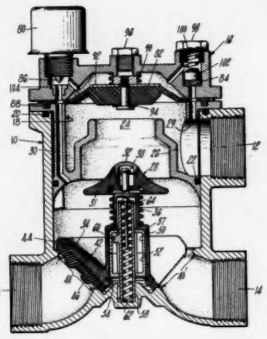
SEQUENCING VALVE

Bob C. Miller, 272 River Dr., Tequesta, Fla.

Filed Jan. 16, 1973, Ser. No. 324,236

Int. Cl. F16k *21/00*

U.S. Cl. 137—119 **17 Claims**



A flow sequencing valve which employs separate valve elements to generate the force required for cycling and to accomplish discharge port sealing is disclosed. The valve may include an integral pilot solenoid for controlling cycling and is characterized by a force generating element, in the form of a variable resistance to flow, which is free to overtravel relative to the port sealing member whereby flow rate compensation is achieved and water hammer effects eliminated.

3,785,392

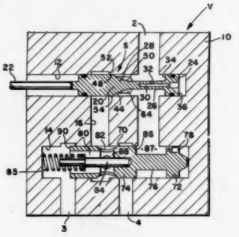
FLOW CONTROL VALVE

Charles H. Baker, Parma, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 191,269

Int. Cl. F16k *21/00*

U.S. Cl. 137—117 **4 Claims**



A flow control valve for providing a selected rate of fluid flow to a controlled fluid operated device. The valve includes a flow control member which is axially movable to select the

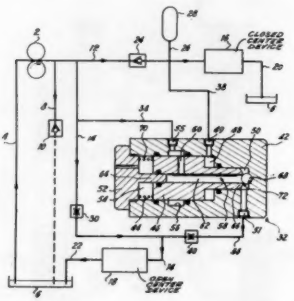
flow rate of fluid to be supplied to the fluid operated device. The flow control member is operable to establish a flow control orifice having an area linearly proportional to the axial position of the flow control member. A pressure compensating device maintains a constant pressure drop across the orifice and thus the valve provides a controlled flow rate of fluid which is linearly proportional to the axial position of the control member.

3,785,393

FLUID POWER BRAKING AND STEERING SYSTEM

Christian Tanguy, Frepillon, France, assignor to Societe Anonyme D.B.A.

Filed May 2, 1972, Ser. No. 249,596
Claims priority, application France, May 7, 1971, 7116534
Int. Cl. G05d *11/00*
U.S. Cl. 137—110 **2 Claims**



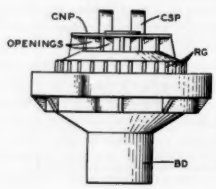
The vehicle hydraulic system comprises a pump, an accumulator adapted to energize a closed-centre power brake booster, and a open-centre power steering mechanism, the supply line of the power steering mechanism including a throttle in parallel relationship with a control valve. The valve member of the said control valve is actuated by a stepped piston responsive to the fluid pressures in the accumulator and in the supply line downstream said throttle, both pressures acting against a spring, thereby insuring a minimum level of pressure in the accumulator.

3,785,394

WATER CONTROL VALVE STRUCTURE

Farris E. Dixon, Louisville, Ky., and Sherwood L. Young, Monson, Mass., assignors to American Standard Inc., New York, N.Y.

Filed July 12, 1972, Ser. No. 270,897
Int. Cl. F16k *45/04*
U.S. Cl. 137—218 **9 Claims**



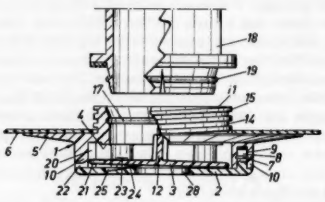
Covers a water control valve for the water tank of a toilet bowl in which the valve structure is constructed for better and more positive anti-siphonic action. The valve structure includes a plunger which is coupled by a lever arm to a float so that the plunger may move vertically within a chamber having a tapered wall in response to changes in the level of water in the tank. The chamber has an opening at the bottom for a valve seat which may be sealed by an elastomer affixed to the base of the plunger when the plunger reaches its lowermost position to close the valve. Near its upper end, the plunger has a collar for loosely supporting two elastomer disks of considerable elasticity to seal the upper end of the chamber for the anti-siphonic action. An additional flexible elastomer element is positioned on another collar of the plunger and is spaced from the tapered wall of the chamber throughout the stroke of the plunger in either direction. The anti-siphonic disks are located within a housing having a cap with a plurality of holes therein through which air may be admitted, and the cap is also provided with an overhanging canopy which blocks the admission of foreign matter to the chamber while permitting air to enter the chamber. The cap is joined to a body member to complete the housing, the body member providing the chamber in which the plunger is freely movable.

3,785,395

AIR VALVES

Bror Elis Andreasson, Bangatan 21, Vanersborg, Sweden

Filed Dec. 14, 1972, Ser. No. 315,227
Claims priority, application Sweden, Jan. 19, 1972, 566/72; Nov. 8, 1972, 14446/72; Nov. 8, 1972, 14442/72; Nov. 8, 1972, 14444/72
Int. Cl. F16k *15/20*
U.S. Cl. 137—223 **24 Claims**



In air valves for use in connection with large inflatable objects and of the kind comprising a valve housing having air through-flow openings at its inner end and an annular valve seat, a valve disc arranged to be pressed against said seat by the internal pressure in the object and means to releasably retain said valve disc in blocked position. The blocking means are arranged on the valve disc proper and are accessible from the outside and so arranged that no special tools are required to manipulate the valve disc. The blocking means may be formed in various ways, such as in the form of a tongue to be inserted in a recess in the valve housing wall, a fork-shaped projection of the disc engaging underneath a stud formed in the housing wall, a piston having a ball-shaped end and cooperating with spring means to exert a pressing action on the valve disc, recesses formed in the valve having bottom into which recesses projections on the valve disc are urged, possibly while bending the disc against the resiliency of the disc material itself, etc.

3,785,396

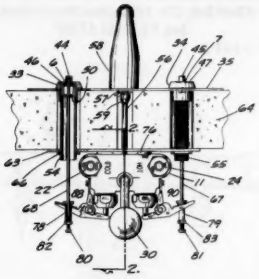
TAMPER-PROOF, FLUID FLOW CONTROL SYSTEM

Earl L. Morris, 1501 N. Cloister Rd., Whittier, Calif., and Theodore J. Sally, 7236 Friends Ave., Whittier, Calif.

Filed July 5, 1972, Ser. No. 269,090
Int. Cl. F16k *11/10*
U.S. Cl. 137—359 **7 Claims**

A tamper-proof, pushrod-activated fluid flow control mechanism is described which incorporates a means for externally adjusting the length of the pushrod used to actuate the fluid flow control valve for varying such parameters as fluid,

flowrate and fluid flow time delay without requiring disassembly or the addition or removal of a part from the mechanism. Compactness of the mechanism assures rapid installation or removal from the pipe chase area without impairing the operation of the user controls which are typically exposed to tampering by users. Provision is made for the installation, as desired, of fluid flow control limiting and/or vacuum breaking devices.

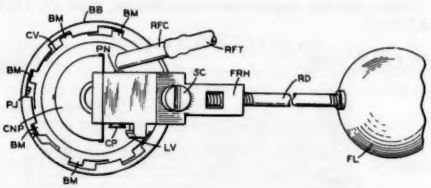


3,785,397

WATER CONTROL VALVE STRUCTURE

Sherwood L. Young, Monson, Mass., assignor to American Standard Inc., New York, N.Y.

Filed July 12, 1972, Ser. No. 270,898
Int. Cl. F16k *31/26*
U.S. Cl. 137—434 **13 Claims**



This application covers a water control valve for the water tank of a toilet bowl. The housing encloses a vertically movable plunger and an open-ended chamber into which water is admitted for filling the tank, together with mechanism for controlling the vertical or axial movement of the plunger. The housing includes two unitary molded sections — a body section and a cap section which can be joined together in assembling the valve structure, or they may be separated from each other. The body section has a plurality of peripherally arranged inverted L-shaped sections which are equally spaced from each other, while the cap section embodies a corresponding plurality of bayonet members. When the body and cap sections are to be interconnected to form the composite housing, the bayonet members are positioned between the corresponding L-shaped members and one of the sections is physically given a rotary twist or shift to complete the interconnection.

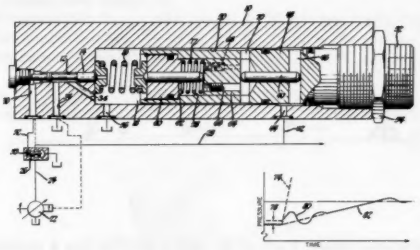
3,785,398

POWER TRANSMISSION

Kurt R. Lonnemo, Troy, and Jan O. Bergstedt, Birmingham, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Aug. 9, 1972, Ser. No. 278,919
Int. Cl. G05d *16/10*
U.S. Cl. 137—488 **9 Claims**

A relief valve for hydraulic power transmission systems serves not only to limit the maximum system pressure, but also to limit the rate of pressure rise in the system when subjected to sudden transients which would otherwise cause large pressure overshoots before stabilizing at the designed pressure level. The valve is opened by system pressure reacting against a spring and has the spring normally set to permit valve opening at a small fraction of the designed maximum relief pressure. System pressure also reacts upon a spring loading piston of larger area which, when moved through its full stroke, brings the spring load up to the designed maximum limit. The rate of travel of this piston is regulated by a dashpot.

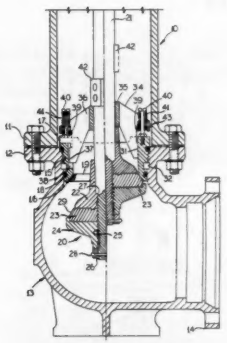


3,785,399

FIRE HYDRANT DRAINAGE VALVE

Rosaire Daigle, St. Lambert, Quebec, Canada, assignor to Daigle Aqua Inc., Quebec, Canada

Filed Aug. 20, 1971, Ser. No. 173,544
Int. Cl. F16k *1/00*
U.S. Cl. 137—305 **5 Claims**



A fire hydrant having a valve seat and a valve stem having a valve thereon seating on the valve seat, drain passages through the valve seat leading externally of the hydrant and spring loaded means on the valve stem closing the drain passages rapidly during the initial opening movement of the hydrant valve.

3,785,400

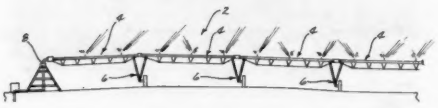
ALIGNMENT MONITORING SYSTEM FOR A SELF-PROPELLED IRRIGATION SYSTEM

Arthur L. Zimmerer, Lindsay, and John L. Anderson, Columbus, both of Nebr., assignors to Lindsay Manufacturing Co., Lindsay, Nebr.

Filed July 27, 1972, Ser. No. 275,713
Int. Cl. B05b *9/02*; **E01h** *3/02*
U.S. Cl. 137—344 **7 Claims**

An alignment monitoring system for a self-propelled irrigation system of the center pivot type is disclosed herein. The

alignment monitoring system is operatively electrically connected to the electrical control circuit which deactivates the electrical power means on all of the towers if one of the towers moves out of alignment with respect to the other towers in a predetermined amount. Each of the towers has a safety switch thereon which causes the entire electrical circuit to be de-energized if the safety switch is opened by misalignment of the



associated tower. Each of the safety switches has a resistor connected thereto which is connected to ground. All of the resistors have progressively increasing resistances with respect to each other. If one of the tower safety switches is opened by misalignment of the associated tower, the operator switches a milliampmeter into the resistor circuit to determine which of the particular towers cause the control system shut down.

3,785,401

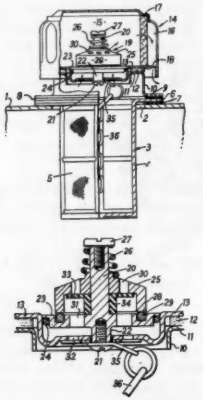
AIR BREATHER ASSEMBLY

David Button, Bury St. Edmonds, England, assignor to U.C.C Hydraulics Limited, Norfolk, England

Filed June 19, 1972, Ser. No. 263,942

Int. Cl. F16k *17/26, 45/00*

U.S. Cl. 137—493.2 **3 Claims**



An air breather for mounting on a container wall having an opening has a first loaded valve permitting outflow of air when a certain internal pressure is exceeded, and a second loaded valve permitting inflow of air when a certain lowering of internal pressure below atmospheric is exceeded, the first valve including a movable apertured housing acting as a valve member and cooperating with a valve seating, and the second valve having a movable resiliently deformable flange acting as a valve member and cooperating with the apertured housing serving as a seating.

3,785,402

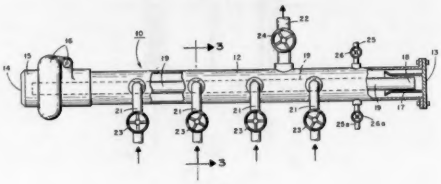
REMOVABLE TUBULAR INSERT FOR REDUCING EROSION IN HEADERS

Howard E. Collier, New Orleans, La., assignor to Esso Production Research Company, Houston, Tex.

Filed July 27, 1972, Ser. No. 275,853

Int. Cl. F16l *57/00*

U.S. Cl. 137—561 A **9 Claims**



A production header for sand carrying fluids such as petroleum hydrocarbons is provided with a removable tubular insert extending the length of the header and which is provided with an abrasion resistant surface against which the fluids impinge to absorb the shock and prevent erosion of the inner wall of the header.

3,785,403

FLUID LOGIC CIRCUIT

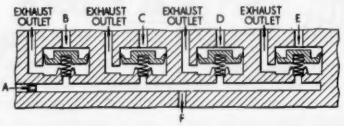
Colin John Kirk, Crowthorne, England, assignor to Martonair Limited, Middlesex, England

Filed Mar. 13, 1972, Ser. No. 233,919

Claims priority, application Great Britain, May 13, 1971, 14,747/71

Int. Cl. F15c *3/04*; **F17d** *1/00*

U.S. Cl. 137—608 **4 Claims**



A fluid logic circuit has a logic 'AND' function and utilises a plurality of valves which are operable between two conditions by fluid pressure inputs, representing logic inputs, presented to respective valve inlets for each valve, there being a common outlet to all the valves, the fluid pressure in which is controlled by the respective conditions of said valves, so that a fluid pressure representing a logic output is present at said outlet only when a fluid pressure is present at each inlet.

3,785,404

DEVICE FOR THE FLOW CONTROL OF MEDIA, PARTICULARLY CONTAMINATED LIQUIDS AND/OR GASES

Max Gappisch, Karlsruhe-Durlach; Friedrich Claus Walter, Ettlingen, Baden, and Horst Pollmacher, Malsch-Sulzbach, all of Germany, assignors to Argus Gesellschaft mbH, Ettlingen/Baden, Germany

Filed June 6, 1972, Ser. No. 260,251

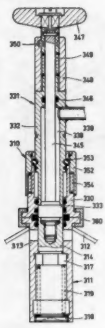
Claims priority, application Germany, June 11, 1971, P 21 28 967.8; Mar. 14, 1972, P 22 12 176.2

Int. Cl. F16l *35/00*

U.S. Cl. 137—614 **15 Claims**

A valve structure for controlling the flow of poisonous and/or contaminated media into a container, comprising two vertically aligned valve bodies releasably connected with each

other and containing each an axially slidable closure piston, whereby these two pistons are releasably and sealingly connected with each other at their opposite end faces and of which the upper piston is provided with a lengthwise extending actuating rod extending with circumferential clearance lengthwise through a tubular portion of the upper valve body which tubular portion is connected to a media supply pipe. In



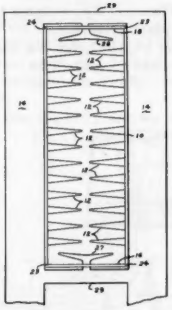
one position of the sealingly connected closure pistons the path of flow through the valve structure is closed, while in another position of the connected closure pistons the path of flow is open when the actuating rod has moved the pistons downwardly so far as to connect transverse ports in the lower valve body and to connect these transverse ports at the same time with the interior of the container into which extends the lower valve body.

3,785,405

AERODYNAMIC NOZZLES IN RECTANGULAR DUCT

Brian P. Quinn, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 23, 1972, Ser. No. 228,682
Int. Cl. F15d *1/02*
U.S. Cl. 138—39 **3 Claims**



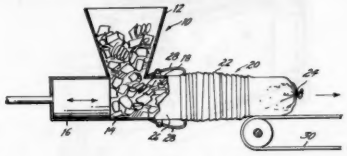
A rectangular duct having a gas flow therethrough wherein there is a tendency for the gas flow to separate from a wall of the duct having an aerodynamic nozzle positioned adjacent the wall that results in a downwash of gas which deters separation. In a duct wherein a plurality of nozzles provide a primary flow of air in a rectangular duct wherein ambient air is entrained and mixed with the primary air, the tip vortices from the aerodynamic nozzles positioned adjacent the duct end walls enhance the mixing and cancel the vortices naturally forming at the juncture of the side walls and the end walls.

3,785,406

CARTRIDGE PACK FOR TRASH COMPACTION MACHINE

John Kenneth Delmar, Havertown, Pa., assignor to Crystal-X Corporation, Darby, Pa.

Division of Ser. No. 61,693, Aug. 6, 1970, Pat. No. 3,650,298. This application Dec. 29, 1971, Ser. No. 213,694The portion of the term of this patent subsequent to Mar. 21, 1989, has been disclaimed.
Int. Cl. F16l *55/00*
U.S. Cl. 138—103 **2 Claims**



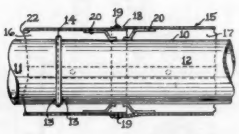
A cartridge comprising a compressed plastic tube for mounting on the tapered end of a hollow cylindrical member into which solid waste or refuse is rammed so that the tube can subsequently be tied and cut into relatively small units containing slugs of compacted refuse. The plastic tube comprises elongated sections, generally about 2 ft. in length, interconnected by adhesively retained external folds, so that after a length of tube, such for example as 32 ft., is filled with slugs of compacted refuse, the folds can be readily pulled open, tied, and severed between the ties to form 2 ft. plastic containers of compacted refuse.

3,785,407

PIPE COVER SPACER AND DIAMETER COMPENSATOR

William Waite, and Victor Skuran, both of Chicago, Ill., assignors to Transco Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 40,102, May 25, 1970, Pat. No. 3,648,734. This application Dec. 27, 1971, Ser. No. 211,952
Int. Cl. F16l *55/00*
U.S. Cl. 138—108 **1 Claim**



A pipe cover spacer and diameter compensator for use with extraction lagging comprising two complementary sections, the sections with the spacers mounted thereon being applied to the exterior of the pipe to completely enclose the latter, with the sections welded or otherwise fastened to each other, thus maintaining spring tension on the spacers. The pipe cover spacer and diameter compensator consists of a plurality of individual, circumferentially arranged, spacing members each having a flat mounting portion abutting and secured to the undersurface of a lagging cover and having a finger extending therefrom and terminating into a relatively flat bendable tab angularly extending from the finger to yieldably bear against the surface of a pipe to resist lateral movement between the cover and the pipe and to compensate for any variation in the space between the cover and the pipe.

3,785,408

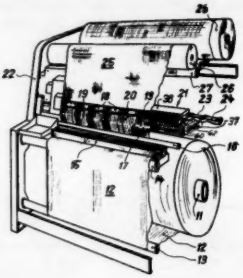
ARRANGEMENT OF MOVABLE THREAD-CONTACTING LAMELLAE ON A WAVE-TYPE LOOM

Edgar H. Strauss, Ruti/Zurich, Switzerland, assignor to Machinery Works Ltd., Ruti/Zurich, Switzerland

Continuation of Ser. No. 86,160, Nov. 2, 1970, abandoned. This application Aug. 23, 1972, Ser. No. 283,063

Int. Cl. D03d 47/26

U.S. Cl. 139—12 11 Claims



An arrangement of movable thread-contacting lamellae for use on a wave-type loom, said arrangement comprising a plurality of thread-contacting lamellae that are guided during movements therefore in open zones between plate-like guide elements, disposed side-by-side in a row over the width of the loom, said elements being assembled together to form a unitary pack, and means for directing streams of air through the zones between the guide elements in which movements of the thread-contacting lamellae occur whereby accumulation of textile fibers, produced during the operation of the loom, within said zones is prevented.

3,785,409

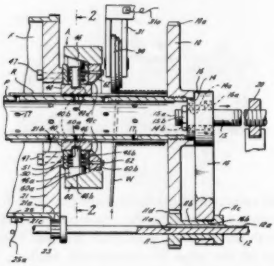
CLAMPING APPARATUS FOR RESISTANCE WELDING OF MULTIPLE WIRES FORMING A WELL SCREEN

Howard F. Smith, III, Houston, Tex., assignor to Howard Smith Company, Houston, Tex.

Continuation-in-part of Ser. No. 260,403, June 7, 1972, abandoned. This application Oct. 31, 1972, Ser. No. 302,424

Int. Cl. B21f 3/00

U.S. Cl. 140—92.2 10 Claims



Clamping apparatus for confining and maintaining electrical contact with multiple longitudinally extending rib wires during the resistance welding thereof to wire wrapped thereon for forming a well screen or the like, wherein the clamping apparatus compensates for wear thereon. The apparatus may be automatically adjustable for wear and also variable in diameter to permit forming the welded screen on upset tubing and on other pipe having variations in the outside diameter thereof while still effecting the electrical contact required for reliable and sound resistance welding of the multiple rib wires to the wrapping wire.

3,785,410

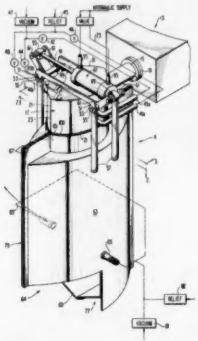
METHOD AND APPARATUS FOR VACUUM FILLING OPEN MOUTH BAGS

Clarence F. Carter, Danville, Ill., assignor to Carter Engineering Company, Danville, Ill.

Filed June 28, 1972, Ser. No. 267,158

Int. Cl. B65b 1/26

U.S. Cl. 141—10 18 Claims



A filling assembly for vacuum filling impervious open mouth paper bags with finely divided particulate material. A filling head is provided with at least two independent vertically extending chambers through which a selective vacuum or relief may be applied. Particulate material is fed through a central opening in the filling head whereby interstitial air is withdrawn from between the particles of particulate material as the material falls downwardly into an impervious open mouth bag. Clamping jaws serve to seal the bag against the filler head during the filling operation and include clamping flanges which extend outwardly from the jaws and tightly close the outer edges of the open mouth bag. A shroud extends from the clamping jaws to provide a sealed enclosure about the bag during the vacuum filling operation. A vacuum source is selectively applied to the shroud to open the impervious bag and keep the bag open during the vacuum filling operation.

3,785,411

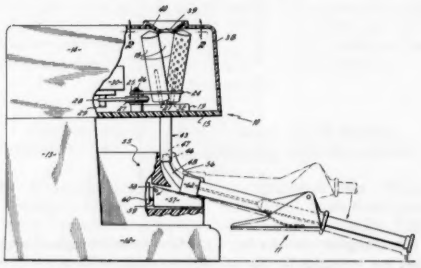
AMALGAM LOADER

Ronald Lee Baker, Florence, Ky., assignor to Charles J. Thiel and Louis J. Michaels, Dayton, Ky.

Filed May 19, 1972, Ser. No. 255,179

Int. Cl. A61c 5/06

U.S. Cl. 141—18 20 Claims



Apparatus for loading a tube with amalgam or other pastey substance in which a plurality, preferably three, rollers are equiangularly spaced close together to define among them a central passageway, the apparatus having means for locating the tube to be filled below the passageway created by the rollers. The rollers are operable to roll a charge of amalgam into

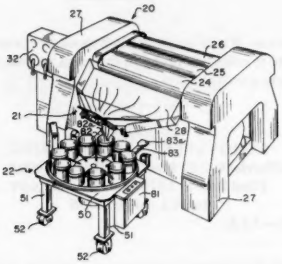
a roll having a diameter slightly less than that of the tube to be filled, whereupon the amalgam passes through the passageway and into the tube.

3,785,412

MILL APRON AUTOMATIC CAN FILLING MACHINE

Leslie F. Stone, Westchester, Ill., assignor to The Richardson Company, Des Plaines, Ill.

Filed Jan. 26, 1972, Ser. No. 220,824
Int. Cl. B65b *3/28*
U.S. Cl. 141—83 **27 Claims**



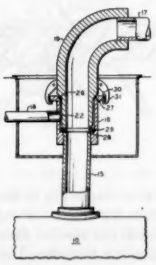
An apparatus for automatically filling containers with controlled amounts of a viscous material, such as printing ink, which is directly supplied to the containers from a viscous material discharge chute such as, for example, the apron of a roll-type dispersion mill. Viscous material from a valve assembly means mounted to the discharge chute is fed into open containers which are supplied into, and away from, a container filling station while a sensing means, for example, a weight detecting device, measures the quantity of viscous material being collected in the containers. A control means responsive to the sensing means regulates the operation of the valve assembly means and provides automatic delivery of the containers in a manner designed to accommodate a large supply rate of the viscous material from the discharge chute with minimal spillage and improved accuracy with respect to that which is presently obtained with manual filling operations.

3,785,413

APPARATUS FOR REDIRECTING FLOW IN A FLUID CONVEYING SYSTEM

Clarence I. Taverner, and Earl E. Kleinmann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1971, Ser. No. 210,328
Int. Cl. B65b *3/18*
U.S. Cl. 141—84 **5 Claims**



An apparatus is provided for redirecting flow in a fluid conveying system. The apparatus is characterized by its simplicity of design and fewer moving parts.

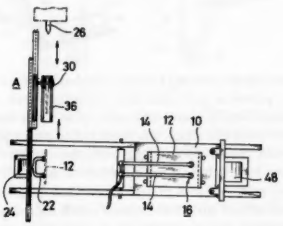
In a preferred application, the apparatus forms part of a venting system for vapors escaping from a storage container for volatile liquids. During storage the small quantity of vapors that form are vented to the atmosphere. However, during filling the apparatus readily converts the venting system to one that provides means for recovering the large quantity of vapors displaced by filling.

3,785,414

AUTOMATIC BAG FEED SYSTEM

Katsuji Obara, No. 2233-42, Minami Tsunashima-cho Kohoku-ku, Yokohama, Japan

Filed Apr. 26, 1972, Ser. No. 247,786
Claims priority, application Japan, Apr. 28, 1971, 46/27500
Int. Cl. B65b *43/44*
U.S. Cl. 141—114 **3 Claims**



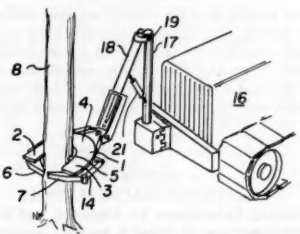
An automatic bag feeding system in which a number of bags are superposed in a bag reservoir and then one sheet of bag is raised vertically by a first pneumatic adsorption means, the raised bag is carried in suspension by a second pneumatic adsorption means to a position confronting to an outlet of a filling spout of a packaging apparatus and thereafter a bag inlet is opened by a third pneumatic adsorption means for insertion to the filling spout.

3,785,415

TREE FELLING DEVICE

Martti Taponen, Prince George, B.C., Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed June 14, 1972, Ser. No. 262,775
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **3 Claims**



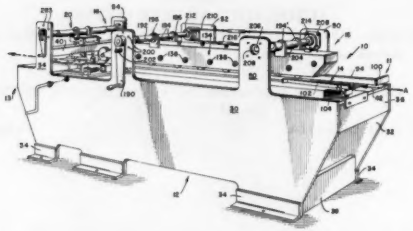
A tree cutting blade is fixedly mounted in a support member. Pressure arms pivotally mounted on the support member grapple a tree and draw the cutting blade into the tree toward the pressure arms. Hydraulic means mounted on the support member and coupled to the pressure arms rotate the pressure arms to draw the cutting blade into the tree toward the pressure arms.

3,785,416

LUMBER PLANER AND CROOK ELIMINATOR

Luther Clary Anthony, 900 Machen P.O. Box 794, Springhill, La.

Filed July 31, 1972, Ser. No. 276,900
Int. Cl. B27c *1/12*
U.S. Cl. 144—116 13 Claims



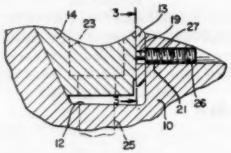
A machine for producing straight lumber from stock including crooked pieces is provided and includes a pair of laterally spaced cutters which simultaneously plane the edges of the stock lumber after the stock has been fed in a straight line with no lateral movement or squiggle into the cutter heads. The stock lumber is fed by a combination of an endless gripper chain having an active run in a grooved table and a plurality of pressure rolls which hold the lumber stock on a top surface of the gripper chain.

3,785,417

CUTTERHEAD WITH REPLACEABLE INSERTS

Prabodh Mohanlal Vora, Beloit, Wis., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Feb. 18, 1972, Ser. No. 227,473
Int. Cl. B27g *13/04*
U.S. Cl. 144—221 2 Claims



A rotary cutting tool for cutting material surfaces such as wood or metal. The cutting edges comprise a plurality of replaceable inserts held in place by an improved clamping mechanism. In an extended length version such as would be used for finishing a wide surface, a plurality of straight inserts are mounted side by side in an approximation of a helical pattern.

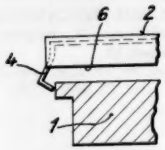
3,785,418

COVER FOR MACHINE TOOLS

Arnold Hennig, Erlenstrasse 10, Ismaning, and Kurt Hennig, Georgensteinstrasse 16, Munich, both of Germany

Filed Apr. 22, 1971, Ser. No. 136,489
Claims priority, application Germany, Apr. 24, 1970, P 20 20 109.6; Feb. 9, 1971, P 21 06 116.5
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R 10 Claims

A cover for a part, such as a guideway, of a machine tool comprises telescopic cover elements each having a cover plate and depending side and end walls having inwardly turned flanges at their lower ends so as to embrace the guideway. The walls are formed of an elastically flexible material to permit the cover to be snapped onto the guideway whereupon the walls and bent inwardly flanges engage the guideway with light



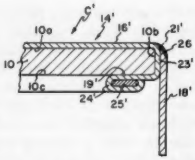
spring pressure. Wiper strips are interposed between telescoping elements to effect cleaning of the parts in response to relative telescoping movements.

3,785,419

REMOVABLE TABLE COVERING

Mary Ellen Sherlock, 232 First St., Gladwin, Mich.

Filed Dec. 1, 1971, Ser. No. 203,649
Int. Cl. A47b *97/00*
U.S. Cl. 150—52 R 2 Claims



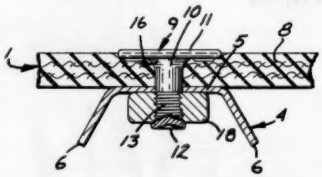
A removable cover for a table comprising an upper portion overlying the top of the table, a perimetrical skirt portion disposed on the sides of the table, and annularly extending restraining means for removably securing the cover to the top of the table.

3,785,420

RIVET AND SETTING TOOL THEREFOR

Robert H. Bradley, Rt. No. 2, Box 333, Long Lake, Minn., and William O. Bradley, 6312 Loch Moor Dr., Edina, Minn.

Filed May 26, 1972, Ser. No. 257,285
Int. Cl. F16b *39/282*
U.S. Cl. 151—37 1 Claim



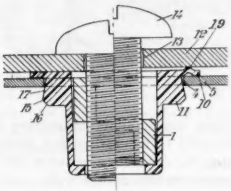
A solid metallic rivet including a diametrically enlarged head and a screw threaded shank for reception of a nut, the head defining a generally flat annular shoulder having portions projecting axially from the shoulder. The shank has an outer end provided with a recess to aid in upsetting the outer end of the shank to strengthen the bond between the shank and nut and to prevent loosening of the nut.

3,785,421

SYSTEMS CONSTITUTED BY CAGE-NUTS AND THEIR CAGES

Pierre Launay, Samois-sur-Seine, France, assignor to Compagnie de Materiel et d'Equipements Techniques C.O.M.E.T., Senlis, France

Continuation-in-part of Ser. No. 885,863, Dec. 17, 1969, abandoned. This application Mar. 30, 1972, Ser. No. 239,499
Claims priority, application France, May 5, 1971, 7116257
Int. Cl. F16b 39/00
U.S. Cl. 151—41.75 13 Claims



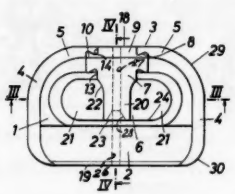
A lug nut is held and guided by a plastic cage formed by a flanged bush, whose cylindrical part has longitudinal apertures in which the lugs slide axially and bosses at right angles to the apertures adjacent the flange. This assembly can be inserted from one side of a sheet into a corresponding slotted hole in the sheet, and on turning through 90° is locked angularly by seating the bosses in the slots. The bush is of nylon and has an annular rib on a surface of the flange to seal the device against the sheet. The bush can have a radial protuberance and ramps on the bosses to prevent inadvertent extraction from the hole. The flange can overlap the cylindrical wall of the bush radially inwardly to form a guiding and sealing hole for the bolt to be engaged in the lug nut.

3,785,422

CONNECTING LINK FOR ANTISKID CHAINS FOR TIRES

Gunter Witzel, Aalen, Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany

Filed Nov. 26, 1971, Ser. No. 202,391
Int. Cl. B60c 27/06
U.S. Cl. 152—241 18 Claims



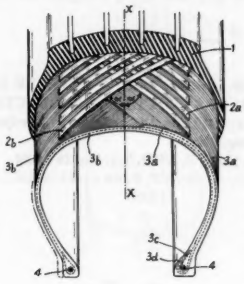
A connecting link for antiskid chains for tires with a link body located in one plane, which link body is provided with a longitudinal opening and two sections spaced from each other so as to define a passage communicating with the longitudinal opening and leading to the outside of the link body while a closure member is detachably mounted in the passage, positively engages the walls defining the passage and divides the longitudinal opening into two substantially equal smaller openings.

3,785,423

TOP REINFORCEMENT FOR PNEUMATIC TIRES

Christian M. L. L. Bourcier de Carbon, 64, boulevard Maurice Barres 92, Neuilly, France

Filed Dec. 15, 1971, Ser. No. 208,316
Int. Cl. B60c 9/18
U.S. Cl. 152—361 R 1 Claim



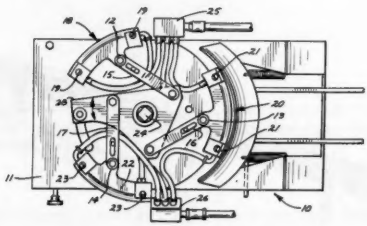
Between the tread of the tire and the body of the tire, whether of the bias filament or radial filament carcass, or having no filamentary carcass, there is embedded a reinforcement band of crossed series of flat parallel elements of metal, plastic, or the like, the angles of intersection of the series being at least 45°, and the elements of each series having a high intrinsic resistance to curvature in the plane of the contact surface. The elements being of a thickness of only a fraction of their width, say a width of the order of a millimeter and a thickness of only a fraction of a millimeter. The interstices and points of intersection of the elements being filled with a rubber composition of relatively low modulus of elasticity. Alternatively, instead of being of metal, plastic, glass fibre, or the like, the bands may be composed of impregnated stranded elements embedded in a rubber having a high modulus of elasticity.

3,785,424

TIRE BEAD SEATER

Sigurad A. Rishovd, Minneapolis, Minn., assignor to Royal Industries, Inc., Osseo, Minn.

Filed Aug. 2, 1971, Ser. No. 167,982
Int. Cl. B60c 25/06
U.S. Cl. 157—1.1 32 Claims



A method and apparatus for mounting tubeless tires on a wheel rim.

A tire mount-demount device of the class utilizing a plurality of movable jaws to receive and grip a vehicle wheel in a generally horizontal position is provided with a means, adjacent at least two wheel gripping jaws, for directing a massive volume of air into a tire that is loosely disposed on the wheel, while additional air under pressure is supplied to the customary valve on the wheel. The air supplied at the jaws is directed

upwardly through the space between the lower bead of the tire and the lower edge of the rim of the tire.

The method comprises the steps of placing a wheel, having a tubeless tire loosely disposed adjacent the rims thereof, on top of a plurality of sources of air under pressure so as to cause the tire to expand and tend to seat the beads of the tire on the rims of the wheel. Additional air provided through the customary valve on the wheel may then easily complete the inflation of the tire.

3,785,425

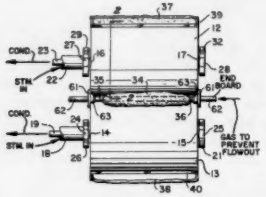
DOCTOR BLADE FOR CONTROLLING BULK DENSITY OF DEHYDRATED CEREAL PRODUCTS

Roy G. Hyldon, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed June 29, 1972, Ser. No. 267,484

Int. Cl. B01d *1/22*; **A23b** *7/03*; **F26b** *11/02*; **A23l** *1/12*; **A46b** *15/00*

U.S. Cl. 159—11 **2 Claims**



An improvement for a film type, rotary drum drier for controlling the bulk density of high sugar content dehydrated cereal products discharged from the drum drier by a doctor blade at a given angle of attack with respect to the surface of the drum drier is disclosed which comprises shaping the doctor blade substantially as showed in FIG. 4.

3,785,426

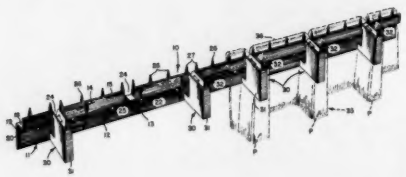
FABRIC HANGING AND PLEATING BRACKET

Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif.

Filed Jan. 22, 1973, Ser. No. 325,831

Int. Cl. A47h *23/00*, *13/14*

U.S. Cl. 160—327 **15 Claims**



A sectional bracket for hanging drapery or other wall covering fabric has an elongated holding bar formed with retention slots to hold a plurality of separable hanger units shaped to assist in forming pleats. The hanger units may be selectively positioned in some or all of the retention slots, depending upon the regular or irregular spacing desired for the pleats. The top edge of the holding bar has prongs and the top edges of the hanger units have spikes to pierce the fabric margin and assist in supporting the fabric in place.

3,785,427

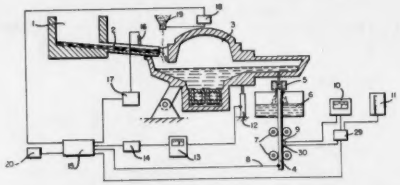
CASTING OF DEOXIDIZED COPPER

Edouard De Bie, Antwerpen, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Aug. 15, 1972, Ser. No. 280,917

Int. Cl. B22d *1/02*

U.S. Cl. 164—154 **8 Claims**



Apparatus comprising conductivity measuring probe for measuring the conductivity of copper casting, measuring apparatus for determining the difference between the measured conductivity and a predetermined conductivity, and means for producing a signal proportional to the difference and transmitting the signal to a regulator which regulates the amount of deoxidizer added to molten copper.

3,785,428

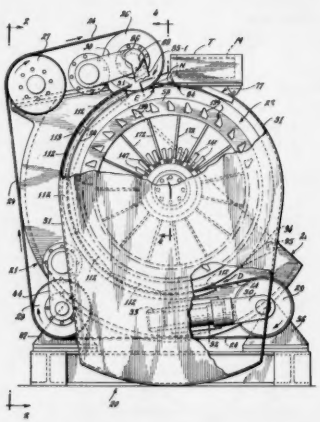
WHEEL-BELT CONTINUOUS CASTING MACHINE

Robert William Hazelett; Richard Hazelett, both of Winooski, and John Frederick Barry Wood, Burlington, all of Vt., assignors to Hazelett Strip-Casting Corporation, Malletts Bay, Winooski, Vt.

Filed Mar. 2, 1972, Ser. No. 231,128

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **27 Claims**



A wheel and belt continuous casting machine employing a thin casting rim with a pair of cooperating mold side members surrounding the thin rim and with a thin flexible belt partially encircling the wheel for defining a casting cavity and high velocity coolant flow against the thin rim and thin belt for intensive heat removal. The thin casting rim is a guided "-floating" rim which together with the pair of guided "floating" unattached mold side members form three of the mold surfaces, with the partially encircling thin belt providing the fourth mold surface, and coolant is flowed longitudinally at high velocity along the concave inner face of the floating rim

to directly cool this rim and indirectly to cool the side mold members and also high velocity coolant is applied to the thin belt. The coolant can be applied over part of the concave circumference of the thin floating rim or over the full concave circumference of the rim. The floating arrangement of the mold defining surface enables the thin casting rim and mold side members to maintain an accurate alignment without buckling while the high velocity coolant maintains the thin rim at substantially constant temperature. Thus, the thin floating casting rim, floating mold side members and encircling belt provide accurate mold surfaces in which thermal cycling is minimized and heat transfer at the mold surfaces can be appropriately controlled by coatings on the thin rim and thin belt, providing long life of the operating components and giving flexibility for casting different metals and different alloys. Resilient seals are located between the floating rim and the rotating wheel structure, and convenient changing of mold components, such as belt, floating rim and mold side members is achieved, and in addition the user can conveniently change one or both cross section dimensions of the mold cavity so that the most appropriate proportions and size of the continuously cast section can be selected.

3,785,429

APPARATUS FOR THE MANUFACTURE OF CIRCULAR PRODUCTS

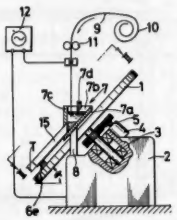
Akira Ujiie, Hyogo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1971, Ser. No. 140,326

Claims priority, application Japan, May 18, 1970, 45-42235

Int. Cl. B22d *27/02*

U.S. Cl. 164—282 **2 Claims**



An apparatus for the manufacture of circular products in which deposited metal melted by electroslag remelting process is successively drawn out of a retainer for keeping a molten slag which melts the filler metal provided at a predetermined location while being solidified and the tip thereof is fixed to a rotary table, provided in an inclined arrangement, at a position out of the center thereof and is returned into said retainer by rotating said rotary table so as to make one complete turn, thus closing a circle to form a circular product.

3,785,430

COOLING UNIT FOR LARGE POLYMERIZATION VESSELS

Kurt Pfeiffer; Johannes Dietrich; Gunter Beckmann, and Karl-Heinz Herkt, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

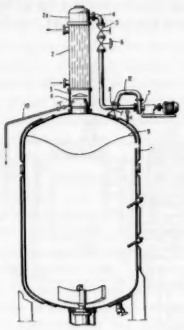
Filed July 30, 1971, Ser. No. 167,568

Claims priority, application Germany, Aug. 1, 1970, P 20 38 363.5

Int. Cl. F28d *15/00*

U.S. Cl. 165—1 **5 Claims**

This invention relates to a process and apparatus for the cooling of polymerization charges in emulsion, suspension, solution, and bulk polymerizations in connection with incompletely filled polymerization reactors or vessels having capacities of 40 m^3 or greater and thermal loads of more than 500,000 kcal/h with the aid of a reflux condenser or cooler



which is in communication with the gas space of a polymerization vessel.

3,785,431

ROTARY REGENERATIVE HEAT EXCHANGERS

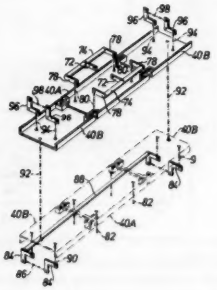
Birger Pettersson, Alta, and Kurt Karlsson, Tyreso, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Sept. 7, 1971, Ser. No. 178,248

Claims priority, application Great Britain, Sept. 8, 1970, 42933/70

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **11 Claims**



Regenerator end sealing plates which move axially with the thermal expansion of the rotor are prevented from tilting by stabilizing means.

3,785,432

ELECTRONIC CONTROL CIRCUIT WITH TIME DELAY OF MAIN AND FEEDBACK SIGNALS

John L. Kabat, Bloomington; John L. Magnussen, New Prague; Richard B. Porter, Bloomington, and James R. Tobias, Columbia Heights, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

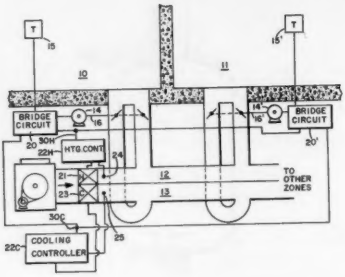
Filed Oct. 2, 1972, Ser. No. 294,418

Int. Cl. F24f *3/08;* **H03f** *1/34*

U.S. Cl. 165—22 **7 Claims**

An electronic control circuit particularly adaptable for use in a heating and/or cooling control system wherein signals are received from a plurality of zones to control stages of temperature conditioning apparatus. The control circuit has a first

time delay circuit for receiving a signal indicative of the need of the energization of temperature conditioning apparatus and a second time delay circuit connected to the output of the first time delay circuit for providing a signal to a control apparatus adapted to control the temperature conditioning apparatus. A



first feedback circuit is connected to the input of the second time delay circuit for providing a feedback signal indicative of the operation of the control apparatus and a second feedback circuit provides a feedback signal to the second time delay circuit indicative of the operation of the temperature conditioning apparatus.

3,785,433

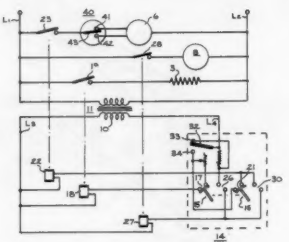
AIR CONDITIONING SYSTEM INCLUDING INDOOR FAN SPEED CONTROL

James L. Ballard, Ellicott City, Md., assignor to General Electric Company

Filed May 30, 1972, Ser. No. 257,702

Int. Cl. F25b *29/00*

U.S. Cl. 165—27 **4 Claims**



An air conditioning system comprising both heating and cooling means and a motor-driven air circulating means includes control means responsive to the temperature of the air flowing from the cooling means for increasing the motor speed during operation of the cooling means.

3,785,434

COOLING AND HEATING UNIT OF AIR-COOLED HEAT PUMP TYPE

Yoshiro Okuma, Toyonaka, and Keizo Inuzuka, Yokohama, both of Japan, assignors to Nihon Netsugaku Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

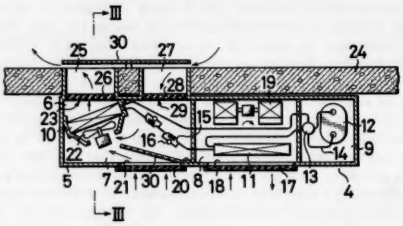
Filed Dec. 27, 1971, Ser. No. 211,921

Claims priority, application Japan, Mar. 30, 1971, 46-22964

Int. Cl. F25b *24/00*

U.S. Cl. 165—29 **2 Claims**

In discharging exhaust room air through a heat exchange coil, outside air is introduced into a case housing the heat exchange coil and the exhaust room air and outside air are mixed together within the case. The mixed air is discharged out-of-doors through the heat exchange coil. Thus the outside



air supplied makes up for the shortage of the exhaust room air to be passed through the heat exchange coil for heat exchange.

3,785,435

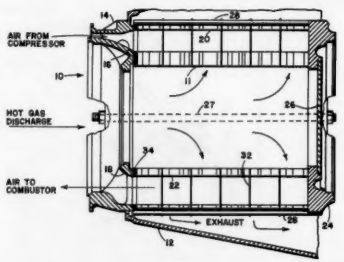
THERMAL DAMPER FOR PLATE TYPE HEAT EXCHANGERS

Wolfgang J. Stein, Milford, and Salvatore Straniti, Orange, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 15, 1972, Ser. No. 306,968

Int. Cl. F28f *7/00*

U.S. Cl. 165—76 **8 Claims**



A heat exchanger is described which is particularly adapted for use with a regenerative type gas turbine engine. The heat exchanger comprises a series of annular discs which define a central flow path for the hot gas discharge of the engine. Adjacent plates define radial flow paths for the hot gas discharge which alternate with cross flow paths between plenums which are respectively connected to the engine's compressor and combustor thereby increasing the energy level of the hot gas stream generated in the combustor. This stack of plates is connected to a frame member of relatively large mass through a series of thermal damper discs which are alternately connected, by seam welding, peripherally around their inner and outer diameters and then peripherally around openings which define the plenum passageways for the flow of air from the compressor and back to the combustor.

3,785,436

WELL PACKER

Philip E. Davis, Jr., P.O. Box 35729, Houston, Tex.

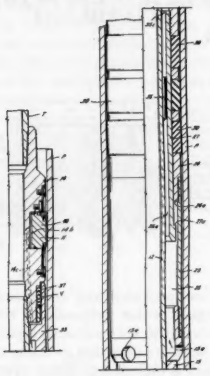
Filed June 23, 1972, Ser. No. 265,655

Int. Cl. E21b *23/06*

U.S. Cl. 166—120 **12 Claims**

A well packer adapted to be used for cementing operations and the like in a well, wherein the packer includes hold-down

slips to hold the packer sealing means and packer slips in the set position, and such hold-down slips are actuated by fluid from the annulus so as to be isolated from the bore of the



packer mandrel to keep the hold-down slips free of cement or other fluids in such bore which might cause a malfunctioning of the hold-down slips.

3,785,437
METHOD FOR CONTROLLING FORMATION PERMEABILITY

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 4, 1972, Ser. No. 294,990
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—281 **18 Claims**

In the production of oil and gas, the production of undesirable fluids is inhibited by the sequential injection into the producing formation of alternating slugs of an aqueous composition containing at least one crosslinkable polymeric material and an aqueous composition containing no crosslinkable polymeric material, wherein the polymer-containing slugs have incorporated therein one component of a two-component catalyst system effective to cause in situ crosslinking of the polymeric material when contacted with a second component of such catalyst system, said second component being incorporated into the nonpolymer-containing slug.

3,785,438
METHODS FOR MINIMIZING FLUID LOSS OF WELLBORE FLUIDS

Jack M. Jackson, and Arlynn H. Hartfiel, both of Houston, Tex., assignors to Chemical Additives Company, Houston, Tex.

Filed Feb. 24, 1972, Ser. No. 228,862
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **1 Claim**

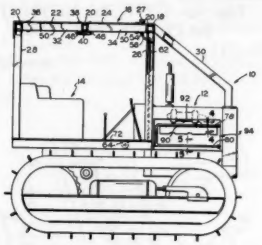
The novelty lies in the use of a group of thermoplastic resins in the form of solid particles which serve as bridging materials, i.e., they plug the pores and fissures of a porous zone of wellbore formation and form a base on which a filter cake may form. The bridging particles are incorporated in the circulating fluid, and are deposited therefrom on the porous formation. The composition of the bridging particles is best described as a saturated thermoplastic resin derived from the polymerization of hydrocarbons; the resin is preferably amorphous or crystalline, and has a relatively high melting point, considerably higher than the temperatures in the wellbore, so that in its preparation it can be mechanically crushed and in use has sufficient strength to avoid deformation. The size of the particles is essentially greater than 50 (fifty) microns. The class of resins suitable for the purpose is essentially insoluble in aqueous wellbore fluids, but is soluble in produced hydrocarbon fluids such as oil and condensate.

After bridging the pores and fissures with such resin, fluid loss control is established by the use of colloidal additives such as lignosulfonates complexed with a trivalent cation and a divalent base. Pressure in the wellbore fluid is maintained at a pressure exceeding the formation fluid pressure during all operations being performed, e.g., drilling through the productive zone, running in casing, cementing, etc. When the well is properly prepared for production, fluid pressure within the wellbore is reduced below the formation pressure, and oil in the formation flows toward the hole. The plug is dissolved by the oil itself, owing to the solubility of the bridging particles in the oil, and production is commenced without the need for acidizing, mechanical abrasion of the plugged zone, or the like.

3,785,439
TRACTOR CANOPY SPRINKLER SYSTEM

LeRoy A. Britt, P.O. Box 428, Pilot Rock, Oreg.

Filed Feb. 9, 1972, Ser. No. 224,827
Int. Cl. A62c *27/00*
U.S. Cl. 169—2 A **14 Claims**



A tractor canopy includes one or more water receiving tanks connected by conduit means to a sprinkler system proximate the tractor engine. A pump withdraws water from the tanks for spraying the same toward the engine in the event of fire.

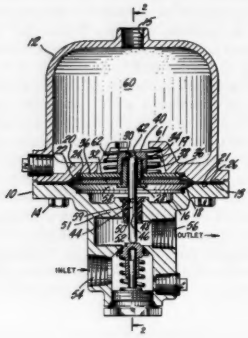
3,785,440
PRESSURE MONITOR AND TRANSDUCER

Edward T. Shea, Huntington, N.Y., assignor to The Reliable Automatic Sprinkler Company, Inc., Mt. Vernon, N.Y.

Filed May 25, 1972, Ser. No. 256,923
Int. Cl. A62c *37/02*
U.S. Cl. 169—20 **30 Claims**

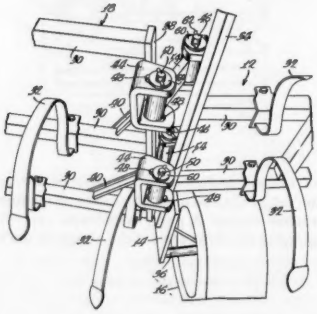
A pressure monitor and transducer, usable as an accelerator for dry pipe sprinkler systems includes a diaphragm separating a closed chamber for another chamber which communicates with the pressure system to be monitored. A controlled leakage valve is mounted centrally in the diaphragm and is linked to a poppet valve which separates the pressurized sprinkler system from the underside or intermediate chamber of a water valve to the system. The force exerted on the diaphragm

by fluid pressure in the closed chamber is concentrated in a very small area on the controlled leakage valve to prevent



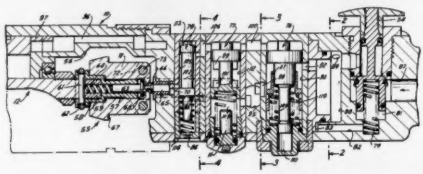
malfunctions caused by dirt and to assure consistent performance.

3,785,441
HINGE CONSTRUCTION
Harry Sosalia, Sac City, Iowa, assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Nov. 1, 1971, Ser. No. 194,712
Int. Cl. A01b *19/04, 73/00*
U.S. Cl. 172—311 **5 Claims**



An improved hinge construction for interconnecting frames of an agricultural implement of the type wherein the frames may be lowered to a work performing position or elevated to a transporting position in which position they are additionally folded with respect to each other. The hinge includes two pintles, one for each frame, which pintles journal an elongated hinge member. One of the pintles is affixed to its associated frame such that the elongated member may cant as well as pivot relative to the frame to provide a relatively full range of movement of one frame relative to the other whether in work performing position or transporting position over varying types of terrain.

3,785,442
PNEUMATIC NUT RUNNING TOOL WITH GOVERNOR SHUT-OFF CONTROL
Lester A. Amtsberg, Utica, and William K. Wallace, Barneveld, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.
Filed Apr. 28, 1971, Ser. No. 138,091
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **15 Claims**

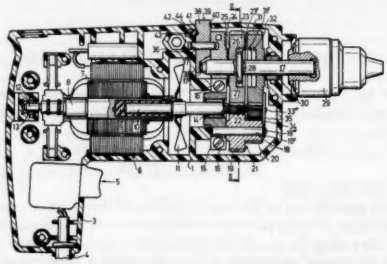


A pneumatic tool provided with combined nut setting and crimping mechanism which responds to rotation of an air motor in one direction to set a nut and responds to rotation of the motor in an opposite direction to crimp the nut. Shiftable valving mechanism is included to direct operating air flow to drive the motor in one direction or the other. A throttle valve is depressible to initiate air flow to the valving mechanism and becomes pneumatically unbalanced against the force of a spring in open condition. A centrifugal motor speed responsive governor valve controls shifting of the valving mechanism and automatic return of the throttle valve to shut-off condition.

In another embodiment, the governor valve is incorporated in a conventional pneumatic nut runner to effect automatic shut off of air flow to the motor.

The term "governor" as used herein means a mechanism having the usual governor elements, i.e., flyweights, valve means, etc.; however, the governor used in the device of the invention functions to sense and respond to a predetermined speed at which certan valves will be made operative to perform desired operational results, all as will be apparent hereinafter.

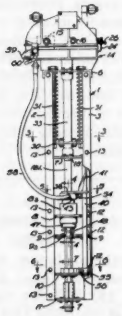
3,785,443
PORTABLE ELECTRIC IMPACT TOOL
Gerhard Armbruster, Stuttgart-Plieningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 24, 1972, Ser. No. 308,941
Claims priority, application Germany, Nov. 24, 1971, P 21 58 118.0
Int. Cl. B25d *15/00*
U.S. Cl. 173—48 **18 Claims**



A portable electric impact drill wherein an axially reciprocable tool spindle can be driven at two speeds by a gear transmission which is installed in front of a universal electric

motor. The tool spindle is movable axially by a rotary or reciprocable selector to assume one of four positions including a first position in which it receives torque from a first gear of the transmission and is driven at a relatively low speed, a second position in which it receives torque from a second gear of the transmission and is driven at a relatively high speed, a third position in which it is disengaged from both gears, and a fourth position in which it receives torque from the second gear and causes an annulus of projections on the second gear to travel along an annulus of projections in the housing of the power tool so that the tool spindle rotates at the higher speed and is caused to perform axial oscillatory movements.

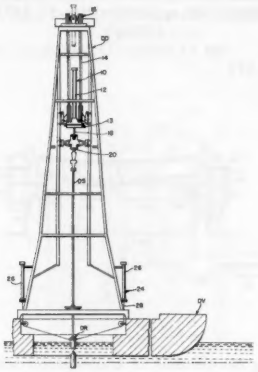
3,785,444
JACKHAMMER
Paul L. Gray, 504 N. Central Dr., Moses Lake, Wash.
Filed Oct. 10, 1972, Ser. No. 296,262
Int. Cl. E21c *7/00, 1/12*
U.S. Cl. 173—78 **5 Claims**



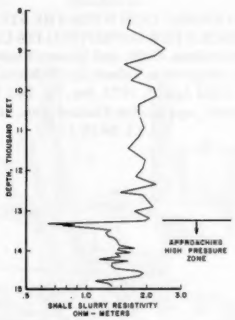
A jackhammer has a frame which supports a trip wheel and a power device for rotating the wheel. A striker bar is held by the frame against the periphery of the wheel. The striker bar has a notch in it and the wheel has peripheral trip fingers to engage the notch alternately to raise and release the striker bar. Coiled springs in the frame are operatively connected to the striker bar to be compressed when the bar is lifted and drive the bar downward when it is released. A drill stem is guided in the frame for limited vertical movement with respect to the frame. A head on the striker bar has a sleeve that strikes a shoulder on the drill stem to deliver the impact caused by the springs when the striker bar is released. When desired, a pawl and ratchet mechanism is included to use the upward movement of the striker bar to turn the drill stem.

3,785,445
COMBINED RISER TENSIONER AND DRILL STRING HEAVE COMPENSATOR
James Joseph Scozzafava, 6403 Winston Dr., Bethesda, Md.
Filed May 1, 1972, Ser. No. 249,035
Int. Cl. E21b *7/12, 19/08*
U.S. Cl. 175—5 **8 Claims**

The rod end of a heave compensator is hydraulically coupled to the head end of a riser tensioner used on a floating drilling vessel. The rod end of the riser tensioner is pressurized an amount sufficient to provide not only a tension on the riser, but in addition a lifting force on the drill string. The hydraulic fluid displaced between the heave compensator and riser tensioner accommodates rotation of the vessel due to wave action. The riser tensioner is isolated from the heave compensator and coupled to a pressurized hydraulic supply whenever the heave compensator is disconnected from the drill string.



3,785,446
PREDICTING OCCURRENCE OF GEOPRESSURED SUBTERRANEAN ZONES DURING DRILLING
Walter H. Fertl; Robert J. Cavanaugh, and John L. Hillhouse, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Aug. 20, 1971, Ser. No. 173,533
Int. Cl. E21b *47/00, 49/00*
U.S. Cl. 175—50 **8 Claims**



An early warning detection method for predicting abnormal formation pressure in subterranean rock strata before it is drilled. The technique is to measure, on a sample removed from the well bore an electrical characteristic such as the resistivity or its reciprocal, conductivity, preferably corrected for formation temperature, while the well is being drilled, in the normally pressured rock strata existing above the abnormally pressured formations. When variations are observed in the degree of change of resistivity or conductivity with depth, drilling procedures are altered to meet the requirements of the formation which is about to be penetrated by the drill bit.

3,785,447

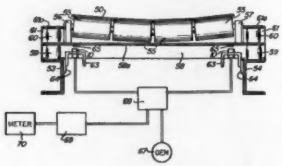
WEIGHING DEVICE FOR MOVABLE CONVEYORS

Alfred A. Blackerby, 11 Mark Dr., San Rafael, Calif.

Division of Ser. No. 92,891, Nov. 21, 1971, Pat. No. 3,659,194, which is a continuation-in-part of Ser. No. 799,322, Jan. 27, 1967, abandoned. This application Mar. 17, 1972, Ser. No. 235,840

Int. Cl. G01g *3/15, 13/02*

U.S. Cl. 177—119 7 Claims



A weighing device used an eddy current sensing device wherein lines of flux are passed in one direction through a stainless steel membrane. The membrane is specially heat treated such that it collimates and permits passage of generated lines of flux yet provides an effective environmental shield that will allow operation even when the device is subjected to temperatures of up to 1,400°F. and pressures of up to 3,000 p.s.i. An impedance comparator circuit, including measuring and reference coils having virtually identical characteristics, is used to operate a meter to thereby indicate proximity and/or characteristics of conductive materials spaced along the undersurface of an endless conveyor belt. The magnetic flux of the measuring coil is shielded and collimated to provide localized sensing and reflected impedance variations between the two coils, which comprise legs of a bridge circuit, are detected and translated to weighing measurements, as represented by the output signal of the sensing device.

3,785,448

DEVICE IN CONNECTION WITH THE STEERING SKI OF A VEHICLE FOR IMPROVING ITS CONTROL

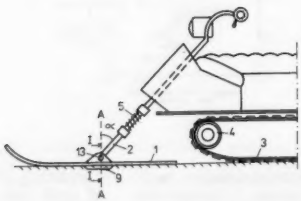
Markku Merenheimo, Oulu, and Mauno Ruuska, Muhos, both of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,186

Claims priority, application Finland, Jan. 26, 1972, 202/72

Int. Cl. B62b *17/02*

U.S. Cl. 180—5 R 8 Claims



Device adapted for steering a motor sleigh and for improving the control of the vehicle, having on both marginal portions of the steering ski a steering plate or plates which are positioned at a given distance from the edge of the steering ski such that the steering effect of the steering plates becomes less with increasing turning angle of the steering ski as a result of the tilting of the steering ski.

3,785,449

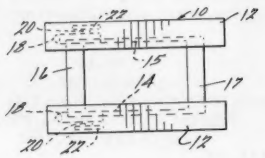
SELF-CONTAINED POWER TRANSMITTING ASSEMBLY

Donald L. Ries, Dearborn Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1971, Ser. No. 175,628

Int. Cl. B62d *55/00*

U.S. Cl. 180—6.48 1 Claim



A self-contained power transmitting assembly capable of being mounted as a unit in a motor vehicle having a structural frame and ground engaging propulsion means such as an endless track. Said assembly includes a rigid elongated housing secured to the frame means, a motor mounted to the housing and projecting therefrom in a direction parallel to the longitudinal axis of the housing and plural gear reduction means positioned within the housing. The motor drives the gear reduction means which in turn drive output means carried by the housing and capable of being drivingly connected to the ground engaging propulsion means.

3,785,450

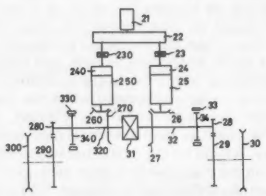
STEERING SYSTEM FOR AN ENDLESS TRACK TYPE TRACTOR

Mitsuaki Suzuki, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 28, 1972, Ser. No. 238,557

Int. Cl. B62d *11/12*

U.S. Cl. 180—6.7 7 Claims



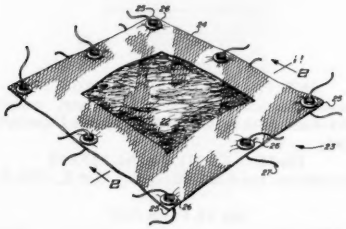
A steering system for an endless track type tractor having an engine which has a power distribution device for equally distributing the power of the engine to two outputs, a pair of couplings, a pair of torque converters, a pair of transmissions, a pair of bevel gear mechanisms, a pair of lateral shafts, a pair of final reduction gear mechanisms, a lateral shaft engaging clutch, and a hydraulic control device having an oil tank, a hydraulic pump, a pair of direction shifting valves, a pair of speed control valves, a pair of steering control valves, and a lateral shaft engagement control valve for travelling straight, turning right or left by braking one endless track and driving the other endless track or by inversely driving both the endless tracks. Thus, the turning performance of the tractor is improved.

3,785,451

FLEXIBLE AND FIREPROOF AUTOMOBILE DIAPER

John T. McCord, Phoenix, Ariz., assignor to Andrea S. Ghigo, Glendale, Ariz., a part interest

Filed Aug. 4, 1972, Ser. No. 277,983
Int. Cl. B32b *1/04*; D04h *1/14*; B32b *3/04*; B62d *25/20*
U.S. Cl. 180—69.1 6 Claims



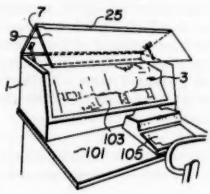
This specification discloses an automobile diaper that is secured in position under an automotive device which contains oil under pressure and which presents the liability of oil dripping therefrom. The diaper is rectangular is shape, fireproof, and comprises a double-layer envelope which receives a mass of absorbent material. The inner layer is plastic and one panel thereof is formed with an opening leaving a marginal portion thereabout. The outer layer is of fiberglass and covers the opening. The envelope is provided with grommets along its edges which accommodates means for securing the diaper in position.

3,785,452

KEYPUNCH ACOUSTIC COVER

Charles Hamilton Scott, 20 Woodmount Cres., Ottawa, Ontario, Canada

Filed June 7, 1972, Ser. No. 260,353
Int. Cl. E04b *1/99*
U.S. Cl. 181—33 K 15 Claims



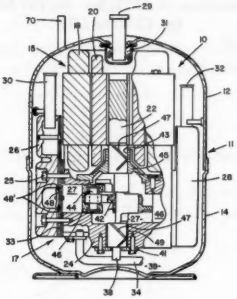
An acoustic cover is described, suitable for use on say a keypunch machine. Box-like in form, with a sloping upper part to the front, the upper front part is transparent and is hinged to a top part, so that when desired it can be swung up to lie on top of the top part. Further, the top part can be moved upwardly through a limited angle about its rear edge. As a result, there are provided five different conditions of enclosure, which leads the operator to adopt the condition which suits the operation being performed, rather than merely leave the acoustic cover in the open position.

3,785,453

COMPRESSOR DISCHARGE MUFFLING MEANS

Salvatore Buonocore, East Syracuse; Harvey G. Stenger, Skaneateles, and George T. Privon, Camillus, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,792
Int. Cl. F01n *3/06*
U.S. Cl. 181—36 R 2 Claims



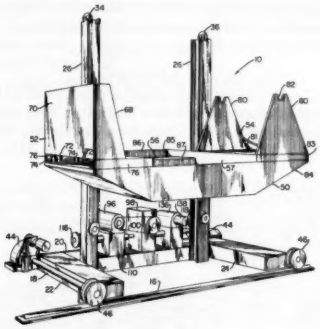
A hermetic motor-compressor unit including a cylinder block having integrally formed silencer chambers between the outer wall of the block and the cylinder wall, provided for attenuating the sound produced by the pulsating characteristic of the discharge gas. The integrally formed chambers include relatively restricted portions and relatively expanded portions.

3,785,454

MOTORIZED SCAFFOLD

Gage B. Behunin, Arvada; Eugene A. Cole, Denver, and Charles R. Staadt, Aurora, all of Colo., assignors to Masonry Systems, Inc., Westminster, Colo.

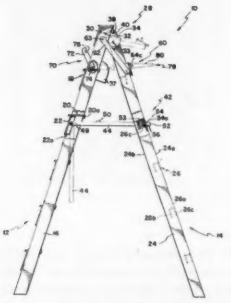
Filed Oct. 26, 1971, Ser. No. 192,015
Int. Cl. E04g *1/18*
U.S. Cl. 182—14 18 Claims



A carriage adapted for industrial use, specifically for prefabricating brick panels, includes an operator supporting scaffold that is mounted for vertical movement on a frame which has power means for moving the frame linearly along a horizontal reference surface and for moving the scaffold vertically on the frame. By appropriately controlling the power means, the scaffold can be moved in a vertical direction, in a horizontal direction, or both. Storage areas and a work table are provided on the scaffold to store various working materials, such as brick and mortar, in a convenient location to the

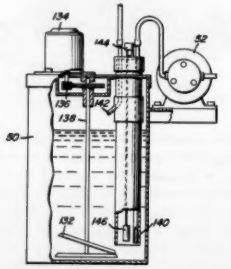
operator. Foot controls for operating the carriage are also located on the scaffold whereby the operator can control his movement both in horizontal and vertical directions while laying brick.

3,785,455
CONVERTIBLE LADDER
Noel E. Waldron, Rt. No. 1, Elwell, Mich.
Filed June 29, 1972, Ser. No. 267,551
Int. Cl. E06c *1/18*
U.S. Cl. 182—22 **21 Claims**



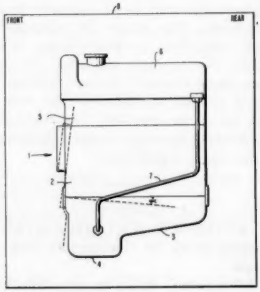
A convertible ladder including front and rear step sections each including side rails spanned by a plurality of steps, coupling members for selectively connecting the step sections for swinging movement from generally parallel, coextensive positions to relatively inclined positions to configure the step sections as a step ladder or connecting the step sections for generally parallel, sliding movement from coextensive positions to extended positions to configure the step sections as an extension ladder, and a support cradle mounted on the front step section for movement between a removed, inoperative position, which is rearward of the rear step section to permit relative movement of the step sections from the coextensive positions to either the inclined or the extended positions, and a support position underlying a step on the rear step section for supporting the rear step section on the front step section when the front and rear sections are extended.

3,785,456
AUTOMATIC LUBRICATION SYSTEM
Nathan E. McIntire, and Zelma M. Porter, both of Clarksville, Tenn., assignors to Elk Craft, Inc., Clarksville, Tenn.
Filed Mar. 21, 1972, Ser. No. 236,756
Int. Cl. F16n *7/30*
U.S. Cl. 184—6 R **5 Claims**



An automatic lubrication system for conveyors and the like, said system comprising means for initiating a lubrication cycle whereby a lubricant agitator and pump are sequentially actuated to deliver lubricant to a dispensing passageway, a timer and relay arrangement effective to open a lubrication solenoid valve to permit a quantity of lubricant to flow into the dispensing passageway and subsequently open a gas solenoid valve to blow gas through the passageway and expel substantially all of the lubricant therefrom onto the member being lubricated, in such a manner that dripping of the excess lubricant or clogging of the passageway is eliminated.

3,785,457
INTERNAL COMBUSTION ENGINE
Hans-Jurgen Strauber, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 6, 1971, Ser. No. 187,025
Claims priority, application Germany, Oct. 8, 1970, P 20 49 406.8
Int. Cl. F01m *1/00*
U.S. Cl. 184—6.5 **14 Claims**

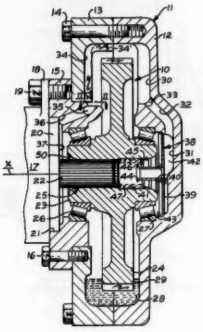


An internal combustion engine, particularly for the drive of motor vehicles, in which the lubricating oil is returned by way of a return line from one end of the cylinder head into the end of the oil sump disposed opposite to the end of the cylinder head which is provided with a collecting pot so that the lubricating oil is conducted from the cylinder head directly into the collecting pot of the oil sump.

3,785,458
LUBRICATION SYSTEM FOR A GEAR DRIVE MECHANISM
Samuel I. Caldwell, Aurora; Michael E. Cheek, and Lawrence R. Cline, both of Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 14, 1972, Ser. No. 244,213
Int. Cl. F16n *7/26*
U.S. Cl. 184—6.12 **18 Claims**

A lubrication system is adapted for continuously lubricating a loose spline connection, attaching a gear to a shaft, and axially spaced bearings rotatably mounting the gear in a closed

housing. The gear rotates to centrifugally discharge lubricating oil therefrom to dynamically lubricate the gear, bearings



and spline connection via suitably arranged chambers and interconnected passages.

3,785,459

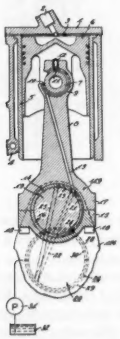
LUBRICATION AND COOLING SYSTEM FOR CONNECTING ROD AND PISTON

Paul J. Patchen, Chicago, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 11, 1972, Ser. No. 252,366

Int. Cl. F01m *1/06*

U.S. Cl. 184—6.5 **16 Claims**



A lubricating and cooling system for lubricating a connecting rod and cooling the underside of a piston of an internal combustion engine.

3,785,460

LUBRICATOR

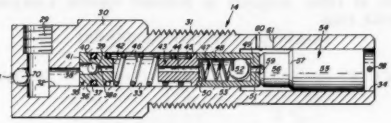
Roy B. Smith, Washington Court House, and Alex T. Sabo, Cuyahoga Falls, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed Feb. 15, 1972, Ser. No. 226,452

Int. Cl. F16n *7/36*

U.S. Cl. 184—43 **10 Claims**

An apparatus for lubricating a universal joint of a vehicle combines the cavity of a hollow drive shaft as a lubricant reservoir and a passageway through a member of the universal joint to its bearings with a conduit for transmitting lubricant from the reservoir to the passageway and a novel metering



valve which opens and closes to lubricant flow into the conduit in response to the speed of rotation of the drive shaft.

3,785,461

AIR LINE OILERS

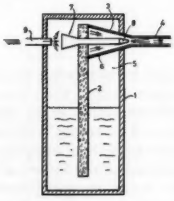
Jozef Johannes Theresia Rompa, 14, Bredaseweg, Terheyden, Netherlands

Filed Dec. 27, 1971, Ser. No. 211,995

Claims priority, application Netherlands, Jan. 18, 1971, 7100621

Int. Cl. F16n *7/34*

U.S. Cl. 184—55 A **4 Claims**



Air line oiler comprising an oil chamber into which a capillary member extends which is exposed to the air flow of the line to be oiled, the inlet of the downstream part of said air line being closed by said capillary member.

3,785,462

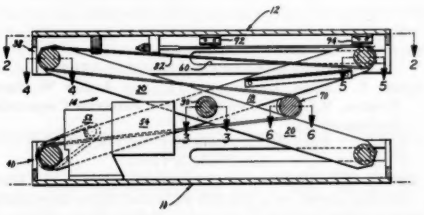
SCISSOR LIFT AND DRIVE MECHANISM THEREFOR

George L. Coad, Walnut Creek, and James C. Carter, San Jose, both of Calif., assignors to Applied Radiation Corporation, Walnut Creek, Calif.

Filed June 23, 1972, Ser. No. 265,704

Int. Cl. B66f *3/22*

U.S. Cl. 187—18 **3 Claims**

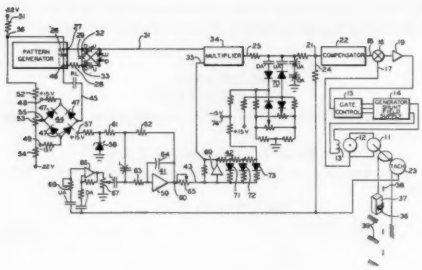


A scissor lift having upper and lower platforms and actuated by a cable reeved so as to pull at least one set of the ends of the scissor together at its extended position and also reeved about a cam roller interposed between the arms and working toward the pivot connection during the portion of the motion in which the lift begins to extend.

3,785,463
FINAL STOPPING CONTROL

Joseph W. Kuhl, Toledo, and Robert J. Lauer, Bowling Green, both of Ohio, assignors to Reliance Electric Company, Euclid, Ohio

Filed May 9, 1972, Ser. No. 251,801
Int. Cl. B66b *1/30*
U.S. Cl. 187—29 R **16 Claims**



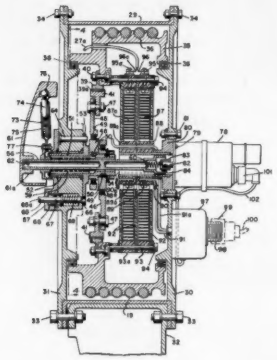
A pattern generator for controlling the terminal portion of the travel of an object along a fixed path. The pattern is a velocity signal which diminishes as the object approaches its destination whereby a smooth stop is dictated. The generator is particularly adapted to the final stopping of vehicles for passengers and is illustrated as the source of control signals for driving an elevator. As an elevator pattern generator, it integrates the pattern signal velocity as represented by voltages when the car is at a point within a given distance from a landing to provide a signal representing displacement. The required displacement to the stop is proportioned to the actual velocity of the car at that point to define a leveling pattern as the product of the proportioning factor and the velocity. As a compromise between square root function, which would afford smoothness and require a long stopping interval, and a straight line function, which would provide minimum transition time to zero velocity and impose infinite jerk at the stop position, the integrated signal is modified as a function of the integrated signal value during approach to the stop. The pattern signal upon initiation of leveling is corrected if a significant disparity with the predetermined desired speed occurs.

3,785,464
CABLE REEL STRING INSTALLATION

Leslie C. Collins, Doylestown, Pa., and Arthur W. Smith, Trenton, N.J., assignors to Eastern Rotocraft Corporation, Doylestown, Pa.

Filed Dec. 23, 1971, Ser. No. 211,581
Int. Cl. H02g *11/02*
U.S. Cl. 191—12.2 R **6 Claims**

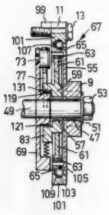
A cable stored on a reel can be reeled out to any adjusted length within its limit. Control mechanism allows locking the drum for load transfer between the cable and the reel at any adjusted position. A load indicating system is supplied to show when a predetermined load is applied at the loaded end of the cable. For this purpose a pair of electrical conductors extend through the cable and a continuing circuit is supplied from the outer rim of the rotating drum to the stationary reel housing. A clock type spiral spring is supplied to rewind the cable and this spring is split into a plurality of sections which are supported in insulated relationship to the drum and housing. In this way the spring parts are used as conductors in the electrical circuit with suitable connections at the outer end spring attachment and at the inner end spring attachment.



3,785,465
CENTRIFUGAL CLUTCHES IN SERIES WITH BRAKE

Rolf Anders Gunnar Johansson, Vare, S-310, Unnaryd, Sweden

Filed Feb. 22, 1972, Ser. No. 228,061
Int. Cl. F16d *21/08, 67/02*
U.S. Cl. 192—48.5 **11 Claims**



A safety device for disengaging the driving portion of a centrifugal clutch of a chain saw when a safety grip is released. A drive disc on the motor shaft has a pivotal centrifugal drive arm for driving the centrifugal clutch hub yoke which is rotatable on the motor shaft. The drive arm is held in operative position against the centrifugal force by a locking arm, which is withdrawn when the safety grip is released, thereby releasing the drive arm and disengaging the drive to the centrifugal clutch. Simultaneously, a brake stops the clutch drum and thus the chain.

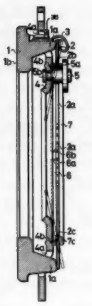
3,785,466
DEVICE FOR HOLDING WIRE RINGS IN DIAPHRAGM CLUTCH

Okihiko Murai, 1-4, Horigaoka, Hirakata, and Mamoru Okubo, 28-8, Hiraikecho, Neyagawa, both of Japan

Filed Oct. 2, 1972, Ser. No. 294,290
Int. Cl. F16d *13/44, 23/00, 23/02*
U.S. Cl. 192—89 B **3 Claims**

A device comprising a diaphragm spring having a peripheral portion seated on the top ends of a plurality of projections along the same circumference on a side face of a pressure plate and retained on the pressure plate by clips, a clutch cover secured to a flywheel, a pair of split wire rings disposed

on the opposite side surfaces of the diaphragm spring to fulcrum the diaphragm spring, and a plurality of connecting members for holding the wire rings in pressing contact with



the opposite surfaces of the diaphragm spring and securing the same to the clutch cover at the same time, the clutch cover being formed in its wire ring bearing surface with a split annular groove for receiving the side face of the wire ring.

3,785,467

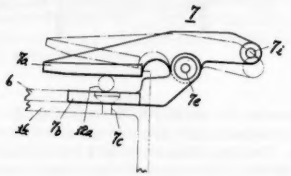
COOLING BED FOR STEEL BAR EQUIPPED WITH STEEL BAR AUTOMATIC STOP MOTION

Koichi Takashima, Toyonaka, Japan, assignor to Kyoei Steel Works, Ltd., Osaka City, Japan

Filed Aug. 24, 1971, Ser. No. 174,481

Int. Cl. B65g *13/075, 47/42*

U.S. Cl. 193—35 A **6 Claims**



A cooling bed equipped with steel bar automatic stop motion, comprising braking apparatuses which stop by their simultaneous motion steel bars running freely into the run-in table at or around the predetermined position, one or more oscillators to operate said braking apparatuses and an automatic control board whereby signal of oscillator is converted to power control by a selective delay apparatus to work said braking apparatuses.

3,785,468

DUAL AXIS ROLL AND CONVEYOR SYSTEM USING SAME

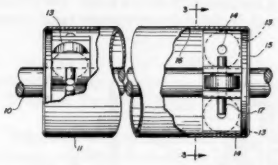
Reid Misenheimer, Decatur, Ga., assignor to Textron Inc., Providence, R.I.

Filed Mar. 1, 1972, Ser. No. 230,747

Int. Cl. G07f *17/04*

U.S. Cl. 193—35 MD **14 Claims**

A dual axis roll structure is provided that allows relative movement of a roll body axially of a shaft carrying the same while resisting relative rotation of the roll body on the shaft, and that may be employed advantageously in conveyor systems where provision is needed for lateral shifting or manipulation of material to be conveyed, as where the material is to be delivered or received from a work station at which



the work to be performed requires such lateral shifting or manipulation.

3,785,469

ROLL TRAIN SWITCH

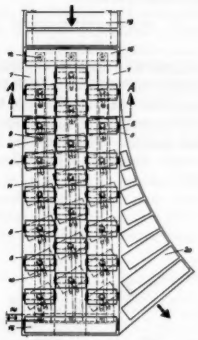
Karl Stumpf, Worringerstr. 78, Goethestrasse 7, Dusseldorf, Germany

Filed Oct. 15, 1971, Ser. No. 189,600

Claims priority, application Germany, Dec. 24, 1970, G 70 47 680.1

Int. Cl. B65g *13/10*

U.S. Cl. 193—36 **4 Claims**



A switch for roll trains wherein goods moving along a main conveyor can be diverted by the switch onto another conveyor. The switch comprises a plurality of rolls, each roll having a length shorter than the length of the main conveyor rolls. Each of the shorter rolls is pivotally mounted above a track on a pin extending therethrough. The pins are eccentrically connected to movable roll setting levers positioned beneath the tracks. Movement of the levers is operative to turn or pivot each of the connected rolls and cause goods conveyed along the main track to be diverted onto another track.

3,785,470

SINGLE COMMUTATION VERTICAL WHEEL MARKING MACHINE

Roy Arthur Schacht, 744 Des Peres Rd., St. Louis, Mo.

Continuation of Ser. No. 148,463, June 1, 1971, abandoned.

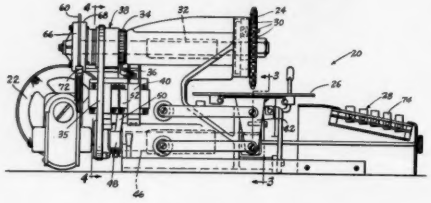
This application May 3, 1973, Ser. No. 356,732

Int. Cl. B41j *1/22*

U.S. Cl. 197—6.4 **6 Claims**

A marking wheel for marking metal or plastic tags and the like employing a rotary marking wheel having marking characters on the periphery which is continuously rotated and, upon depressing of an appropriate key upon a keyboard, is caused to stop. Marking is established by the raising of a worktable driven through a magnetic clutch to engage the tag with the marking wheel. The clutch in stopping of the continu-

ously rotating marking wheel is activated by an electrical circuit which comprises a segment of a commutator stator on a printed circuit board which completes the circuit upon being contacted by a continuously driven rotor. The circuit employs a silicon control rectifier for extremely rapid completion of



the electrical circuit upon the depression of the desired key on the keyboard. The completion of the circuit through the appropriate segment on the commutator further actuates a pawl to engage the appropriate ratchet tooth on a ratchet wheel keyed to the shaft of the marking wheel to stop the marking wheel for the marking operation.

3,785,471

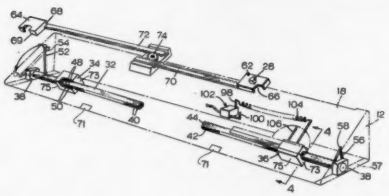
LETTER PLACEMENT INDICATOR FOR TYPEWRITERS AND MEANS RESPONSIVE TO THE INDICATOR FOR SIMULTANEOUS SETTING OF MARGIN STOPS

Irvine Dodds, 1756 Ferry St., Niagara Falls, Ontario, Canada

Filed Aug. 30, 1971, Ser. No. 176,015

Int. Cl. B41j *21/02*

U.S. Cl. 197—63 **8 Claims**



A typewriter includes a mechanism for automatically positioning margin stops to correspond to a predetermined position of a letter placement indicator. A visual end-of-line arrangement, a visual envelope positioning device and visual colored tab setting indicators are provided.

3,785,472

SLAT ELEVATORS FOR COMBINES OR THE LIKE

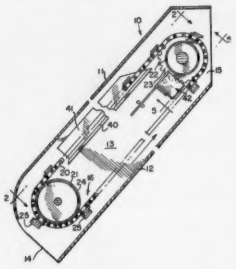
Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.

Filed Feb. 17, 1972, Ser. No. 227,202

Int. Cl. B65g *19/00*

U.S. Cl. 198—171 **9 Claims**

The slat elevator includes a diagonally disposed conduit open at its upper and lower ends, and having a bottom transverse wall. An upper drum carries several sprockets which drive several chains which also pass around a lower drum. Each chain carries a separate series of flexible slats made of tire carcass, and mounted with their width parallel to the path of the chain so that the slat ends curve down toward the bottom wall and are flexed away from same by the crop to avoid packing between the slat ends and the bottom wall. Each slat trails its attachment link. A plow located beneath each sprocket removes any crop which rides on the top of the chain



to avoid clogging the sprocket. Dividers on the upper span maintain the spacing between the separate slat series.

3,785,473

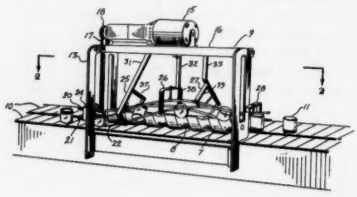
GLASS CONTAINER ANGULAR DISPLACEMENT DEVICE

Charles W. Cook, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 777,419, Nov. 20, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,528

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AC **4 Claims**



Apparatus for automatically adjusting the orientation of glass containers, including tilting and/or inverting the containers. The apparatus includes a rotatable worm conveyor and a plurality of guides partially curved about the worm conveyor so that containers received therebetween are caused to be tilted and/or inverted upon rotation of the worm conveyor.

3,785,474

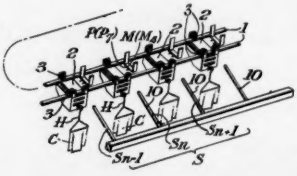
APPARATUS FOR SORTING AND DISTRIBUTING CLOTHING

Taro Nakamoto, 945 Joge, Joge-machi, Konu-gun, Japan

Filed Jan. 11, 1972, Ser. No. 216,959

Int. Cl. B65g *43/00*

U.S. Cl. 198—38 **3 Claims**



Apparatus for sorting and distributing clothing on hangers to predetermined locations along path of travel comprises plu-

rality of spaced apart hanger holding devices arranged for movement along path of travel. Arm on each holding device releasably holds clothes hanger thereon. Releasing mechanism is associated with each holding device for releasing clothes hanger from device at predetermined location along path of travel. Another mechanism cooperates with releasing mechanism at each of plurality of predetermined locations along path of travel of holding devices for activating releasing mechanism of particular holding device at predetermined location so that clothes hanger is released from arm of particular holding device when device arrives at predetermined location.

3,785,475

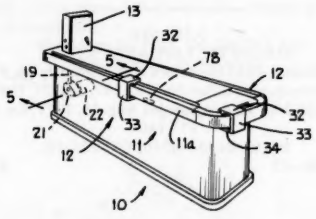
MAGNETICALLY CONTROLLED NON-SYNCHRONOUS CONVEYOR SYSTEM

John F. Maynard, Chesterfield, Ind., assignor to Magna-Matic Systems, Inc., Greensburgh, Ind.

Filed Mar. 9, 1972, Ser. No. 233,109

Int. Cl. B65g *47/00*

U.S. Cl. 198—41 **15 Claims**



Disclosed is a conveyor system utilizing an endless, magnetically permeable chain which moves in a path adjacent a series of work stations. Pallets, carrying workpieces to be processed at the stations are fastened to the chain for movement with it and detached from the chain and braked to a positive, accurately positioned stop by the selective energization of electromagnets carried by each of the pallets. Magnetic means is provided at the trailing margin of each pallet to halt a following pallet before physical contact occurs.

3,785,476

PLATFORM CONVEYOR

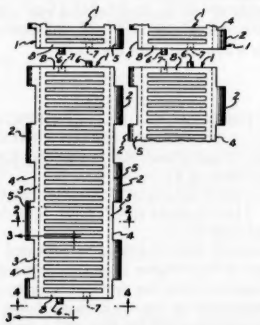
Jannes Jonge Poerink, Postbus 4, Borne, Netherlands

Filed Oct. 6, 1971, Ser. No. 187,188

Claims priority, application Germany Oct. 7, 1970, P 20 49 129.6

Int. Cl. B65g *17/08*

U.S. Cl. 198—189 **2 Claims**



A platform conveyor is provided with a plurality of flat panels. Each of the panels has on its opposite edges closed eyes which are spaced from one another and integral with the panel. The eyes are insertable into the spaces between the eyes of an adjacent panel member and connectable by means of bars insertable through adjacent eyes.

3,785,477

CONVEYING SYSTEM

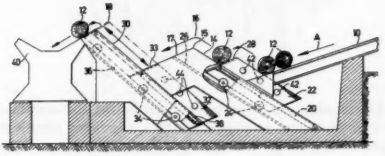
Karl Kwasnitschka, Donaueschingen, Germany, assignor to Joachim Erbprinz Zu Furstenberg, Donaueschingen, Germany

Filed Dec. 23, 1971, Ser. No. 211,409

Claims priority, application Germany, Dec. 29, 1970, P 20 64 178.5

Int. Cl. B65g *25/04*

U.S. Cl. 198—218 **7 Claims**



A conveying system for transversely conveying logs has two conveyors which are arranged sequentially. The first conveyor has two or more transversely spaced guides each having a first portion which is upwardly inclined in the conveying direction and a second portion downwardly inclined from the downstream end of the first portion, also in the conveying direction. A second conveyor is similar to the first conveyor and its first portion receives conveyed logs from the second portion of the first conveyor. Engaging or conveying elements are mounted on these guides for movement in the conveying direction and for return movement, and each of these elements can be individually advanced at a rate which can be selected for it and in forward or reverse direction, independently of the others.

3,785,478

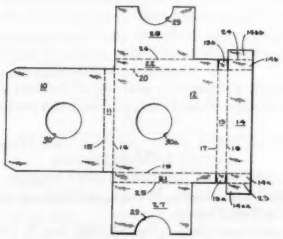
RECLOSEABLE CARTON

Assa Drori, 138 N. Orange Dr., Los Angeles, Calif.

Filed May 6, 1971, Ser. No. 140,920

Int. Cl. B65d *25/54, 5/00*

U.S. Cl. 206—45.31 **10 Claims**



A recloseable carton adapted to retain tape reels and like items, comprises a pocket portion formed at one end thereof and a cover panel hingedly connected to an opposite end of the carton to have its free end tucked within the pocket portion. Side flaps are hingedly connected to side edges of the carton to underlie the closed cover panel to fully protect a packaged tape reel. Aligned cut-outs are provided in the back and cover panels and in the front flaps for viewing the contents.

3,785,479

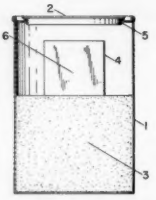
PLASTER OF PARIS BANDAGES TO MAKE CASTS OF IMPROVED STRENGTH, WATER-RESISTANCE AND PHYSIOLOGICAL PROPERTIES

David F. Smith, 660 Longview Dr., Sarasota, Fla.

Division of Ser. No. 95,365, Dec. 4, 1970, Pat. No. 3,671,280. This application Jan. 21, 1972, Ser. No. 219,888

Int. Cl. B65d *81/32*

U.S. Cl. 206—47 A 5 Claims



Minor additions of polyvinyl pyrrolidone and melamine-formaldehyde resins to plaster of Paris bandages permit making casts of improved strength and water-resistance with good physiological properties.

3,785,480

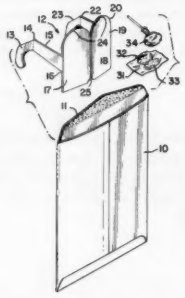
ENTERTAINMENT ACCESSORY PACKAGE

Stephen G. Minasian, Woburn, Mass., assignor to Hallmark Releasing Corp., Boston, Mass.

Filed July 17, 1972, Ser. No. 272,146

Int. Cl. B65d *77/04*

U.S. Cl. 206—47 R 1 Claim



An accessory package for patrons of theatres and the like, containing articles of use during portions of a performance.

3,785,481

MULTI-CHAMBER CONTAINER

Pierre Allet-Coche, Paris, France, assignor to Jean-Jacques Goupil, Cachan, France

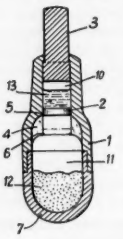
Continuation-in-part of Ser. No. 33,780, Jan. 5, 1970, Pat. No. 3,619,488, which is a continuation-in-part of Ser. No. 703,422, Feb. 6, 1968, abandoned. This application Aug. 12, 1971, Ser. No. 171,178

Claims priority, application France, Aug. 12, 1970, 7029647

Int. Cl. B65d *81/32*

U.S. Cl. 206—47 A 8 Claims

A container having two chambers defined by a partition member, each chamber holding a particular material, and a plunger to move the partition to a position wherein the separator permits the fluid from one chamber to flow to the other chamber and be mixed therein. Means are provided to prevent the partition member from falling into the chamber where the



mixing takes place while still permitting the material to flow from one chamber to the other.

3,785,482

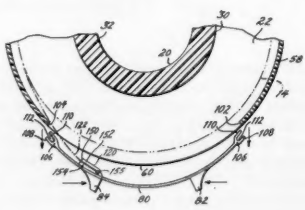
MAGNETIC TAPE REEL SETUP

Larry T. Preston, 4023 Haverford Ave., Philadelphia, Pa.

Continuation-in-part of Ser. No. 792,297, Jan. 21, 1969, Pat. No. 3,601,336. This application Aug. 19, 1971, Ser. No. 173,140

Int. Cl. B65d *85/676*; G11b *23/10*

U.S. Cl. 206—53 5 Claims



An annular teflon hub has annular grooves in surfaces toward its end in which are annular projections of a plastic reel enclosure which can remain stationary while the hub turns with computer tape on it.

Identificatory material is on the peripheral circular outside of the enclosure near an opening through which the computer tape coms into or out from the interior.

A special flexible cover which can be manipulated by the fingers against two projections and has grooved ends, which fit over the ends of the opening, covers this opening when the reel set-up is not in use, and holds the end of the tape at a point inside it convenient for the user.

3,785,483

STABLE FIBER PACKAGE COMPRISING OVERLYING WRAPS OF A FIBROUS TAPE

Roy S. Sillay, Cumberland, Md., assignor to Celanese Corporation, New York, N.Y.

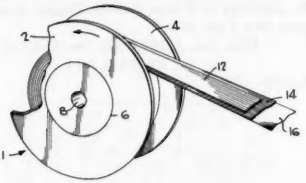
Filed June 9, 1972, Ser. No. 261,462

Int. Cl. B65d *85/67*; B32b *3/30, 5/24*

U.S. Cl. 206—59 A 15 Claims

An improved fiber package is provided wherein a dry fibrous tape is wound upon a rigid support and each overlying wrap is separated from the previous wrap by an interlay. The interlay employed in the formation of the improved fiber package possesses a stiff backing and a resilient contact surface which engages the fibrous tape having a corrugated configuration consisting of a plurality of parallel ridges substantially coextensive with the length of the interlay. The fibrous tape preferably is composed of a carbonaceous fibrous materi-

al (e.g. a graphitic carbon fibrous material). The fiber package possesses enchanced stability, and is resistant to telescoping.



The fibrous tape may be conveniently stored within and unreeled from the package in the absence of fiber damage.

3,785,484

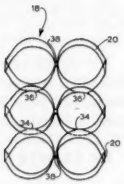
CONTAINER PACKAGE

Ernest R. Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.

Filed Apr. 12, 1972, Ser. No. 243,357

Int. Cl. B65d *71/02, 63/10*

U.S. Cl. 206—65 C **9 Claims**



A multi-packaging device for containers is disclosed as having a plurality of flattened bands of stretchable and elastic plastic material which are interconnected to each other so as to provide a succession of material bands when opened for gripping and holding containers together as a group. The method of manufacturing multi-packaging devices from one or more elongated flattened plastic tubular elements is also disclosed.

3,785,485

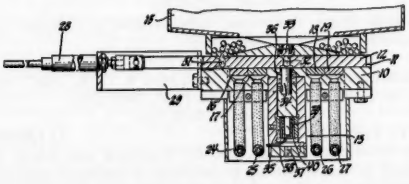
ASSORTING METHOD AND APPARATUS FOR BEARING BALLS

William Blinder, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 52,518, July 6, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,102

Int. Cl. B07c *3/10*

U.S. Cl. 209—75 **6 Claims**



An assorting method and apparatus for monitoring production bearing balls for a predetermined minimum hardness in which the bearing balls are subjected to a load which stresses them to the elastic limit of a bearing ball having the predetermined minimum hardness.

3,785,486

INFORMATION CARD RETRIEVAL APPARATUS

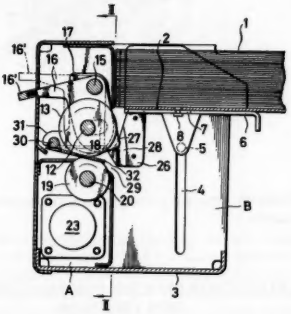
Nobuyuki Yanagawa, Kanagawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,437

Claims priority, application Japan, Mar. 31, 1972, 47/31602

Int. Cl. B65h *25/24*

U.S. Cl. 209—80.5 **4 Claims**



Apparatus for retrieving a selected one from a stack of information cards and for automatically returning the retrieved card to the stack, wherein each of the cards has a code edge with a magnetically permeable portion and a portion bearing code grooves. The apparatus includes means for advancing the stack of cards along a first path, a rotary magnet adjacent the first path for urging successive advancing cards out of the first path and into a second path by attracting the magnetically permeable portions of the cards, and a plurality of pivoted members individually movable to positions for engaging the code edges of the advancing cards in register with the grooves of a selected card, so as to permit only the selected card to be diverted by the magnet into the second path while directing other cards along the first path away from the magnet. A set of reversibly driven rollers advances a diverted card along the second path to a withdrawn position, and returns the card back into the stack of cards in the first path, depending on the direction of drive of the rollers. A member movable into and out of the second path separates a returning card from the magnet as the card moves toward the first path. Fixed guides engage lugs projecting from the cards to cooperate with the magnet, pivoted members, and rollers in guiding each successive card in the appropriate direction.

3,785,487

APPARATUS FOR DETECTING AND CAPTURING DEFECTIVE ARTICLES

Gilbert W. Spencer, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

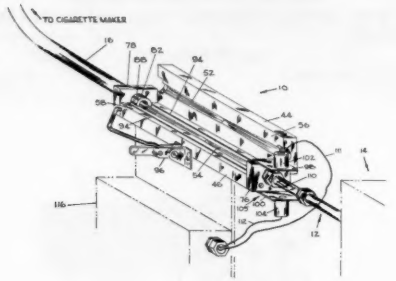
Filed Feb. 14, 1973, Ser. No. 332,473

Int. Cl. B07b *13/04*

U.S. Cl. 209—82 **12 Claims**

A restriction die for detecting and capturing imperfect filters is carried in a pneumatic tube conveying line. The die has a bore which tapers inwardly from each end to produce a convergent-divergent passage having a restrictive orifice at its midpoint. A series of circumferentially spaced grooves extending radially outward from the bore are formed in the die so that the bottom surfaces of the grooves form an outline of a cylinder which is slightly larger than the entrance and exit diameters of the bore and which is concentric with the bore at

any cross-section through the die. The grooves permit the conveying air to by-pass any blockage which may occur in the



bore. Detector means is provided to indicate when a blockage has occurred.

3,785,488

FLOTATION PROCESS FOR RECOVERING MOLYBDENUM

Michael Francis Werneke, Milford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 27, 1972, Ser. No. 248,317
Int. Cl. B03d *1/06*
U.S. Cl. 209—167 **3 Claims**

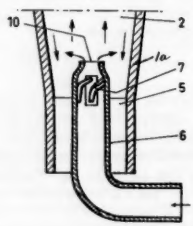
A process for recovering molybdenite from a metallurgical concentrate comprising a major proportion of copper sulfide and other sulfides and a minor portion of molybdenum sulfide is provided, in which the copper and other sulfides are selectively depressed by employing a mixed thiol-alcohol thereby enabling the molybdenite to be recovered by flotation.

3,785,489

CYCLONE SEPARATOR WITH UNDERFLOW DILUTER

Rune Frykhult, Huddinge, Switzerland, assignor to Aktiebolaget Celleco, Tumba, Sweden

Filed July 14, 1971, Ser. No. 162,447
Int. Cl. B04c *5/18*
U.S. Cl. 209—211 **7 Claims**



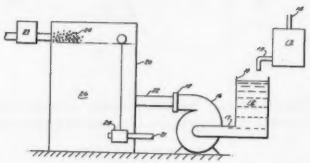
To dilute a heavy fraction separated in a cyclone separator, the latter is provided with a duct for supplying the diluent while maintaining it in rotation around the separator axis, the supply duct having a discharge orifice located at a radial distance from and within a circumferential wall surrounding the separated heavy fraction.

3,785,490

WATER PURIFICATION APPARATUS

Jack E. Ryan, Rockville, Md., and Sylvan Gollin, Claremont, Calif., assignors to Walter Dorwin Teague Associates Incorporated, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,716
Int. Cl. B03d *1/14*
U.S. Cl. 210—109 **4 Claims**



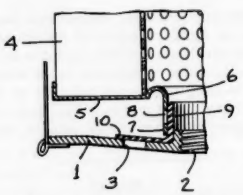
In a froth flotation type of water purification system, a pump is used to deliver influent from a storage reservoir into a froth flotation tank. The pump is subject to intermittent air-binding thereby introducing air into the influent prior to its delivery to the froth flotation tank. The intermittent air-binding of the pump provides for thorough mixing of fine air bubbles with the influent thereby forming an effective froth for removal of suspended solids from the influent.

3,785,491

FILTER ANTI-DRAINBACK AND RELIEF VALVES

Emery Dudinec, Colonia, and John R. Wilhelm, Perth Amboy, both of N.J., assignors to Purolator, Inc., Rahway, N.J.

Filed Oct. 28, 1971, Ser. No. 193,477
Int. Cl. B01d *27/10*
U.S. Cl. 210—130 **3 Claims**



A single molded rubber element provides both the relief valve and the anti-drainback valve in an automotive-type oil filter.

3,785,492

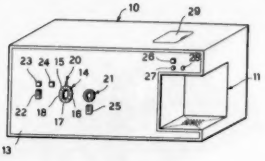
METHOD AND APPARATUS FOR THE PREPARATION OF BEVERAGES

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanuissi S.p.A., Pordenone, Italy

Filed Mar. 9, 1971, Ser. No. 122,488
Claims priority, application Italy, Mar. 9, 1970, 21657/70; Aug. 29, 1970, 29155/70; Oct. 14, 1970, 30991/70
Int. Cl. B01d *9/00, 3/42*
U.S. Cl. 210—149 **21 Claims**

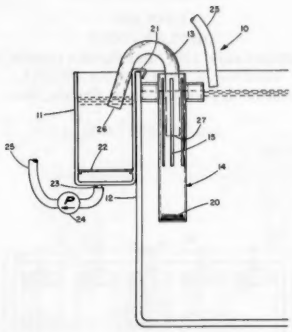
An automatic machine, also for household use, which is adapted to the automatic preparation of imitation mineral waters. The machine essentially comprises a desalting device, a mineralizing unit which introduces in the desalted (also distilled) water a dosage unit of selected mineral salts, a carbonation device for saturating the remineralized water with carbon dioxide and a programming unit for selecting both the quantity and the quality of mineral (or demineralized) water.

A programming timer defines the sequence of the several steps directed to prepare the mineral water according to



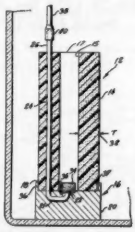
desire. Fractional crystallization of ice is a preferred procedure.

3,785,493
AQUARIUM SIPHON
William R. Harding, 6144 E. St. Joseph St., Indianapolis, Ind.
Filed June 5, 1972, Ser. No. 259,718
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **9 Claims**



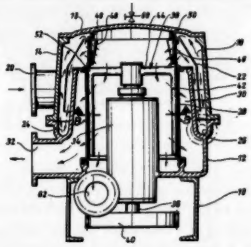
An apparatus for siphoning foreign material from the top surface of the water within an aquarium tank. A liquid receptacle is suspendedly mounted externally to the aquarium tank having filtering means for cleaning the water taken from the top portion of the tank. The receptacle has an outlet connected to a pump which returns the cleaned water to the tank. The water from the top portion of the tank is siphoned into the receptacle by means of an inner tube which extends freely into a floating outer tube having a plurality of slots which extend through the surface of the water within the tank. Foreign material from the top surface of the water within the tank enters the slots and then into the inner tube and eventually into the receptacle. The outer tube includes a pair of floats for insuring that the outer tube remains in a vertical position. The bottom end of the outer tube is sealed and closed for supporting ballast. As the elevation of the top surface of the water within the aquarium tank changes, the elevation of the outer tube will also change with the inner tube remaining stationary.

3,785,494
FILTERING DEVICE
Nicholas Sama, 4940 S. W. 95th Ave., Miami, Fla.
Continuation-in-part of Ser. No. 240,491, April 3, 1972, abandoned, Continuation-in-part of Ser. No. 28,730, April 15, 1970, abandoned, Continuation of Ser. No. 665,817, Sept. 6, 1967, abandoned. This application Mar. 30, 1973, Ser. No. 346,574
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **9 Claims**



An improved and compact filtering device especially adapted for use in aquariums which includes a tubular chimney of porous material having an internal column or bore which column constitutes a lift tube pumping means for the filter. Means are provided for introducing a stream of air bubbles into the bottom of the chimney column or lift tube to flow therethrough and to cause water to be drawn through the porous walls of the chimney from the aquarium for filtering, the water passing directly from the filtering medium into the lift tube column or pumping means, to exit therefrom through an unobstructed and free unreduced opening at the top of the chimney column or bore. The bottom of the chimney is preferably provided with means to constrain the flow of liquid through the filtering medium; and means connected to the chimney are provided to hold the device in a submerged vertical attitude.

3,785,495
PRESSURE FILTER FOR FIBROUS SUSPENSIONS
Emil Holz, Eningen/Wuertt, Germany, assignor to Hermann Finckh Metalltuch- und Maschinenfabrik, Reutlingen/Wuertt, Germany
Filed Aug. 27, 1971, Ser. No. 175,446
Claims priority, application Germany, Aug. 16, 1971, 2140904
Int. Cl. B01d *33/06*
U.S. Cl. 210—210 **9 Claims**



A multiple stage pressure filter for suspensions of fibrous materials including a housing having a cover and a fixed upright filter basket, a rotor concentric thereto and a rotor drive mounted therein. The rotor is provided with at least one carrier connected to a shaft of the rotor drive, a second filter

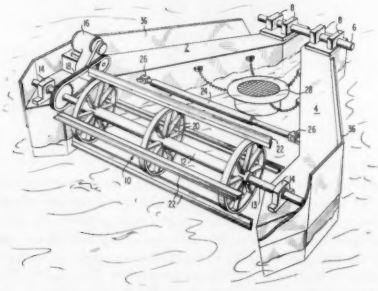
basket provided on the rotor, and at least one fixed scrubbing member associated with the second filter. In one embodiment, the carrier is arranged under the second filter basket while the scrubbing member is secured to the cover.

3,785,496

OIL RECLAIMING DEVICE FOR REMOVING OIL FROM THE SURFACE OF WATER

Raymond Peter Smith, Jr., South Williamsport, Pa., assignor to Craftmaster, Inc., Williamsport, Pa.

Filed July 28, 1972, Ser. No. 276,000
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **5 Claims**



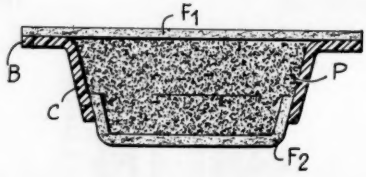
An apparatus for removing oil slicks from the surface of the water which includes two independently pivotable booms connected together to form a V. A paddle wheel is connected to the two booms across the open end of the V for skimming the oil off the surface of the water and forcing the oil towards the apex of the V. A sump is located at the apex of the V for collecting the oil forced to the apex of the V by the paddle wheel. A flexible stabilizer bar is connected between the two booms for stabilizing the booms and limiting the maximum amount that the booms may pivot with respect to each other.

3,785,497

FILTERING ELEMENT

Louis Giffard, 11, rue Houvenagle, Saint-Brieuc, France

Filed Jan. 12, 1972, Ser. No. 217,368
Claims priority, application France, Oct. 26, 1971, 7138401
Int. Cl. B01d *27/08*
U.S. Cl. 210—282 **11 Claims**



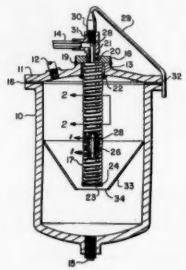
The invention relates to a filter or filtering element used alone or in juxtaposition with other elements of the same kind, for the purpose of purifying a fluid, which element constitutes an enclosure acting as a container for the pulverulent product and comprises a substantially rigid surrounding member optionally rigidly connected to a cover and base through which the fluid to be treated may pass, and is characterised in that at least one of the walls of said enclosure is made of a vinyl material which contracts under heat so as to enable the volume of the enclosure to be reduced after it has been completely filled with pulverulent product.

3,785,498

HELICAL COIL FILTER APPARATUS

John J. Fernandez, Sr., 144 Encinitaz, Monrovia, Calif.

Filed Jan. 19, 1971, Ser. No. 107,628
Int. Cl. B01d *33/00*
U.S. Cl. 210—351 **4 Claims**



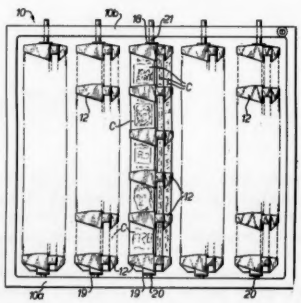
This invention relates to fluid filtering devices and more particularly to the improvement in multiple nested helical coil filters that are used to separate solid particles from fluids and gases, fluids from gases, and fluids from fluids; comprising a leeward coil of substantially smaller diameter than the adjacent main filter coil.

3,785,499

DISPLAY UNITS

Rodney Banfield Gedye, 100, Effra Parade, London, England

Filed Nov. 8, 1971, Ser. No. 196,667
Claims priority, application Great Britain, Nov. 11, 1970, 53,598/70
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **5 Claims**

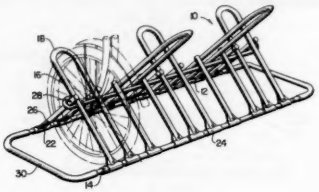


A display unit for tape cassettes, books and similar articles comprises a frame supporting at least one stack of article holders in the form of tray-like elements adapted to fit over opposite ends of the articles and movable between article-retaining and article release positions, and key-operated means on the frame for locking all holders in a stack in the article-retaining position.

3,785,500
BICYCLE RACK

Cleve F. Kennelly, 500 N. 87th Way, Scottsdale, Ariz.

Filed Apr. 27, 1972, Ser. No. 248,130
Int. Cl. B62h *5/00*
U.S. Cl. 211—5 **6 Claims**

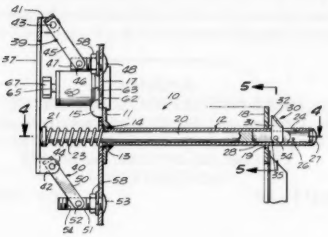


A bicycle and the like rack including, when erected, a plurality of arcuate slots for holding bicycles in an upright side-by-side relationship with a wheel thereof engaged in the slots. The rack is foldable to a collapsed, flat condition for storage or transporting and means are provided for locking bicycles in the rack.

3,785,501
PILFER-PROOF MERCHANDISE CARD HOLDING DEVICE

Glenn R. Canning, 8318 Elmont St., Pico Rivera, Calif.

Filed Mar. 31, 1972, Ser. No. 240,131
Int. Cl. A47f *7/024*
U.S. Cl. 211—7 **4 Claims**



A pilfer-proof merchandise card holding device is disclosed which supports the cards by an opening formed thereon for that purpose. The device provides for preventing the removal of the cards until the merchandise is sold.

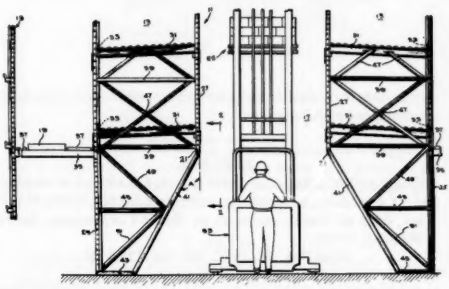
In one embodiment of the device an elongated tubular hanger for the cards is provided with a retaining post on the outer end thereof. A spring loaded actuating rod extending from the rear of the hanger maintains the retaining post in a vertical position to prevent the removal of the cards. When the actuating rod is depressed the post is adapted to be pivoted to a position aligned with the hanger to enable the removal of the cards. The device is provided with a locking mechanism which prevents the actuating rod from being depressed until unlocked by a sales clerk.

In another embodiment of the device a plurality of spaced vertical posts extend upwardly through a slot provided along the upper wall of the tubular hanger. A card is supported between each of the posts. The posts rest on a shelf within the hanger and are attached to a chain. When the actuating rod is depressed, the chain is adapted to be advanced causing the posts to be moved along the slot toward the front end of the hanger so that the forwardmost post is carried by the chain down into the hanger. The card that was being retained by that post can thus be removed from the hanger. The actuating rod is arranged to be depressed by the action of a lever which operates as a result of the insertion of a coin in a coin machine.

3,785,502
STORAGE RACKS

Anthony N. Konstant, Mt. Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 67,124, Aug. 26, 1970, Pat. No. 3,659,723. This application May 1, 1972, Ser. No. 249,010. The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. A47f *5/00*
U.S. Cl. 211—134 **12 Claims**



Storage racks including fore-and-aft aligned upright trusses extending upward from the floor and having vertical columns interconnected by spacers extending therebetween. A rear column extends to the floor, and a bottom member located adjacent the floor extends forward from the lower end thereof A front upright terminates short of the floor and is structurally interconnected with a depending strut which is disposed rearward thereof. Parallel vertical columns spaced laterally of the truss define a storage bay therebetween. The recessing at the front of the truss provides maneuvering room for lift trucks and thereby reduces the width requirements for service aisles.

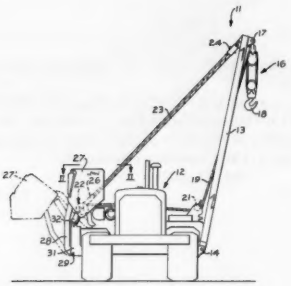
3,785,503
BOOM CONTROL MECHANISM FOR TRACTORS OR THE LIKE

Max E. Butterfield, Peoria; Willis E. Windish, Pekin, and Morton M. Coker, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 30, 1972, Ser. No. 258,047
Int. Cl. B66c *23/54*
U.S. Cl. 212—8 B **5 Claims**

A pair of winch drums mounted on a shaft receive the load cable and boom cable of a tractor side boom for pipe laying operations and the like. Simplified, rapid and versatile control of the two winch drums is effected by coupling the shaft to the power takeoff of the tractor through a power shift drive transmission providing a plurality of drive ratios including at least one reverse drive and by transmitting drive from the shaft to each drum through planetary gearing means having fluid pressure operated drive establishing devices for causing drive to be transmitted from the shaft to one or both drums as necessary including counter rotation of one drum relative to the other to enable power driven lowering movement as well as raising motion. Normally applied brake means at each drum are released by the fluid pressure signals which actuate the drive establish-

ing devices of the planetary gearing thereby providing fail safety. The system requires fewer control levers then prior



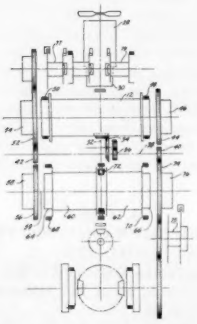
mechanism for a similar purpose and responds more rapidly to control lever manipulations.

3,785,504

CABLE AND CARRIAGE DRIVE FOR GRAPPLE YARDER

Lyle O. Cheldelin, Bellingham, and Curth Myhre, Sedro Woolley, both of Wash., assignors to Skagit Corporation, Sedro Woolley, Wash.

Filed Feb. 23, 1972, Ser. No. 228,679
Int. Cl. B66c *21/00*
U.S. Cl. 212—84 **6 Claims**



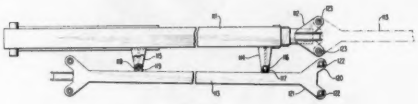
A grapple yarder is described having an engine-driven cable-reeling structure including a plurality of drums with gear drives and clutches for engaging the drive mechanism with the respective drums. The drum system includes an outhaul drum which carries the outhaul cable normally used as a running skyline whereby it both supports the grapple carriage and pulls it outwardly from the yarder; and a pair of main line drums for reeling a two-part inhaul line to move the carriage inwardly with associated drive gear, clutches and brakes such that each drum may be operated or stopped independently and a differential mechanism positioned between the main drums effective to drive them simultaneously but in opposite directions, as may be required to operate a load line or tag line attached to one part of the inhaul line.

3,785,505

SIDE STOWABLE JIB FOR CRANE BOOMS AND JIB MOUNTING

Joseph H. Keller, Jr., Hagerstown, Md., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Dec. 15, 1970, Ser. No. 98,393
Int. Cl. B66c *23/66, 23/68*
U.S. Cl. 212—144 **17 Claims**



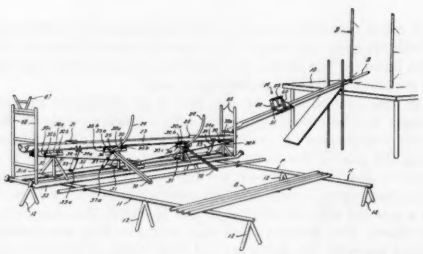
An extension jib for telescoping crane booms is stowed in a non-use position along one side of the boom when the boom is retracted. The stowed jib is held in forward and rear bracket structures on the boom base section. The forward bracket embodies a pivot for the stowed jib and the rear bracket embodies a multi-position latch. The base of the jib which faces forwardly in the stowed position is adapted to be pivoted to the nose assembly on the boom fly section but is normally spaced from the nose assembly. Pivoting of the stowed jib on the forward bracket structure while the latch on the rear bracket structure is in a safety position moves the base of the jib toward the nose assembly so that a pivotal connection with the nose assembly can be established. Subsequently, the pivotal connection between the jib and forward bracket structure is eliminated and the latch on the rear bracket structure is moved to a release position and the jib is swung 180 degrees on its pivotal connection with the nose assembly and is then locked thereto in a forwardly extending use position. The entire manipulation of the jib is accomplished by one man with safety and without the need for tools.

3,785,506

DRILL PIPE HANDLING APPARATUS

Roger A. Crocker, and Jim F. Schoolcraft, both of Wickett, Tex., assignors to Roger A. Crocker, Wickett, Tex.

Filed Sept. 10, 1971, Ser. No. 179,502
Int. Cl. E21b *19/00*
U.S. Cl. 214—1 P **9 Claims**

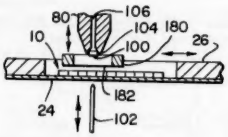


Drill pipe handling apparatus for taking pipe from a well derrick floor to a pipe rack, wherein the pipe is transferred to a lower pivotable pipe support disposed in proximity to the pipe rack, and the pipe is then gradually lowered from said pipe support onto the pipe rack by a pivoting of the pipe support, and with the pipe supported during its lowering on a pair of pipe support arms extending laterally relative to the pipe support and pivoting in response to the weight of the pipe thereon.

3,785,507
DIE SORTING SYSTEM

Mordechai Wiesler, Lexington; Virgil Martinonis, Gloucester, and John S. MacIntyre, Lynnfield, all of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.

Continuation of Ser. No. 92,572, Nov. 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 785,209, Dec. 19, 1968, Pat. No. 3,583,561. This application Aug. 16, 1972, Ser. No. 281,107
Int. Cl. B65b 69/00
U.S. Cl. 214—1 BH 10 Claims

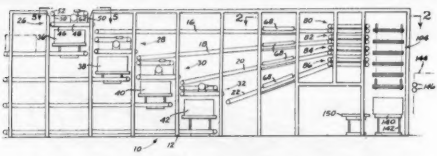


A wafer of semiconductor devices is tested to determine the quality of each device. The test data with respect to each die is electro-optically encoded and photographically recorded in a pattern corresponding to the die pattern on the wafer. Upon completion of the testing and recording operations the wafer is scored, mounted on a flexible pressure sensitive adhesive web and broken so as to separate the dies from one another while maintaining their original orientation. The dice and their respective test record are then mounted on a common frame, side by side, so that each die and its test data are readily matched. The frame is then mounted on a die sorting mechanism comprised of an XY indexing table which indexes the wafer die by die through a removal station and the film indexed through an electro optical reader where the test data is read out to designate the die to a selected delivery station.

3,785,508
APPARATUS FOR LAYING UP PLYWOOD PANELS

Roy E. Hayden, Grants Pass, Oreg., assignor to SWF Plywood Company, Albany, Oreg.

Filed Oct. 27, 1972, Ser. No. 301,342
Int. Cl. B65g 57/06
U.S. Cl. 214—6 M 11 Claims

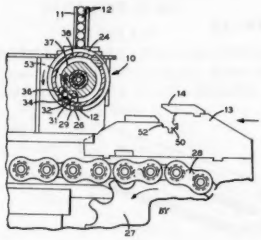


Plywood lay-up apparatus including a plurality of vertically spaced veneer sheet conveyors having an adjacent set of discharge ends, and a lay-up table below the discharge ends of the conveyors. Lowering apparatus positioned over the lay-up table and adjacent the discharge ends of the conveyors is adapted to receive veneer sheets from the conveyors, with the sheets held one above the other in the relative positions they are to have in a formed panel, and to lower the sheets onto the lay-up table. Sheet chargers are provided at the discharge ends of the conveyors for controlling the discharge of sheets onto the lowering apparatus. A core sheet supply is operable to intersperse glue-coated core sheets between selected pairs of veneer sheets as they are lowered to the table.

3,785,509
TRANSFER DEVICE

Vincent J. Girardi, Grosse Point Wood, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Aug. 17, 1971, Ser. No. 172,382
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 H 3 Claims

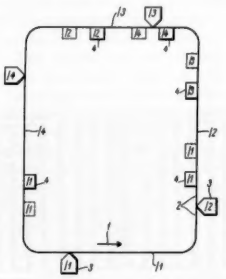


A transfer device for use in taking fixtures or workpieces from a hopper and placing them in a transverse position for receptive engagement by a holding device moving along a longitudinal path through a broaching machine.

3,785,510
METHOD FOR THE DESTINATION CONTROL OF OBJECTS FED INTO A DISTRIBUTING CONVEYING SYSTEM AND DISTRIBUTING CONVEYING SYSTEM FOR PERFORMING SUCH METHOD

Wilhelm Grooteboer, Sinzig, Germany, assignor to Alex Linder GmbH, Nuertingen, Germany

Filed Mar. 13, 1972, Ser. No. 234,005
Claims priority, application Germany, Mar. 12, 1971, P 21 11 934.6; Switzerland, Jan. 28, 1972, 1247/72
Int. Cl. B65g 43/00
U.S. Cl. 214—11 C 30 Claims

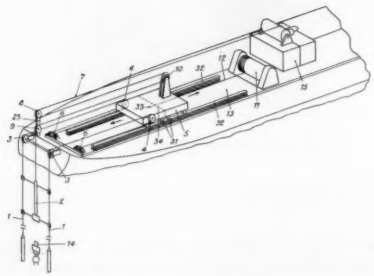


A method and apparatus for transporting items along conveyor sections to desired destination stations positioned along the conveyor sections. The system utilizes stored data for each item representing the item track section, item destination and item track section ranking.

3,785,511
ANTI-POUNDING DEVICE MOUNTED ON A BOAT FOR MAINTAINING A CABLE AT A GIVEN LEVEL ABOVE AN UNDERWATER BED

Philippe J. F. Bonnamy, Boulogne-Billancourt, and Jean A. Mugneret, Carrieres-s-Seine, both of France, assignors to Compagnie Francaise Des Petroles, Paris, France

Filed Mar. 2, 1972, Ser. No. 231,237
Claims priority, application France, Mar. 2, 1971, 7107145; Feb. 17, 1972, 7205381
Int. Cl. B65g 67/58
U.S. Cl. 214—14 22 Claims

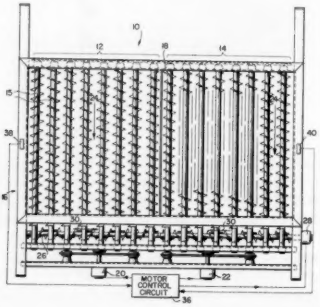


An anti-pounding device is provided to prevent the relative movement generated by waves to be transmitted to a tool. A system of pulleys is arranged on a carriage that is fixed to a guide path. A power winch is connected through a pulley to the carriage and accordingly, to a suspended tool to eliminate the relative movement of the boat. The arrangement of pulleys with a movable support can be connected to a tower or crane in a similar fashion with a compensation bar.

3,785,512
APPARATUS AND METHOD FOR FEEDING MATERIAL FROM STORAGE BINS AND THE LIKE

William L. Gatz, and Kenneth A. Rennicke, both of Paragould, Ark., assignors to Royal Industries, Pasadena, Calif.

Filed June 19, 1972, Ser. No. 264,253
Int. Cl. B65g 65/30
U.S. Cl. 214—17 D 17 Claims

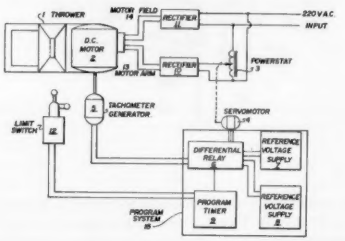


Aggregate material, such as wood chips, is metered from the bottom of a storage bin by means of two bands of screw conveyors which are operated alternately in order to overcome the effects of bridging of the aggregate stored in the bin.

3,785,513
AUTOMATIC SPEED CONTROL AND PROGRAMMING SYSTEM FOR HIGH-SPEED BELT CONVEYOR TYPE THROWERS

Frank Kitzinger, Montreal, and Peter Tarassoff, Ormeaux, Quebec, both of Canada, assignors to Noranda Mines Limited, Montreal, Quebec, Canada

Filed June 9, 1971, Ser. No. 151,198
Claims priority, application Canada, Mar. 5, 1971, 106971
Int. Cl. F27b 3/18
U.S. Cl. 214—18.22 17 Claims

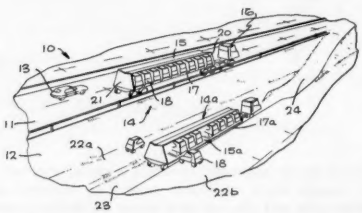


An apparatus for the controlled feeding of charge material into a metallurgical reactor or vessel is constructed and designed to distribute charge material over the surface of a molten bath in the vessel in a substantially uniform layer and in a manner to obtain high rates of efficiency in smelting and converting. An endless belt thrower is provided which is constructed and dimensioned to convey the material and feed it into the vessel in a predetermined manner. A variable speed motor is adapted to drive the thrower and a control system is adapted to regulate the voltage of the motor and the speed at which the motor drives the thrower. A program system is adapted to regulate the control system according to a predetermined program.

3,785,514
VEHICULAR TRANSPORTATION SYSTEM AND APPARATUS

John P. Forsyth, and Robert W. Forsyth, both of 1517 N. 3rd Ave., Upland, Calif.

Filed Mar. 16, 1971, Ser. No. 124,808
Int. Cl. B65g 67/02
U.S. Cl. 214—38 R 2 Claims



The vehicular transportation system and apparatus disclosed herein includes a main traffic course or artery extending between populated areas and communities, self-propelled transporter vehicles for operation thereon and a systematized means for their processing therealong, local surface street networks, and individual, self-propelled satellite passenger vehicles or cars for use therearound. Each transporter vehicle is adapted to carry a plurality of the satellite cars in controlled groups. The loaded transporter vehicles selectively enter and exit the main traffic artery by interchange means provided at

predetermined locations along its length. Means are selectively operable to serve as guide means for loading and unloading the plurality of satellite cars with respect to a transporter vehicle. Any one of the satellite cars can enter or leave a controlled group, a transporter vehicle can exit the main traffic artery and the satellite car, utilizing its means of self-propulsion, may return to surface streets and operate thereon independently.

3,785,515

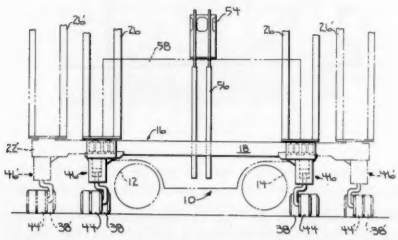
TRANSVERSE-TRAVELING LOAD HANDLING VEHICLE

Walter M. Shaffer, Peoria, Ill., assignor to Towmotor Corporation, Cleveland, Ohio

Filed Jan. 14, 1972, Ser. No. 217,897

Int. Cl. B60p *1/54*

U.S. Cl. 214—75 G **2 Claims**



An apparatus and method in the form of a transverse-traveling load handling vehicle having transport wheels adapted to move the vehicle in a forward and reverse longitudinal direction and auxiliary sets of extendible-retractable supporting wheels mounted at right angles relative to the transport wheels for raising the vehicle and its transport wheels to a position elevationally spaced from the surface supporting the vehicle to permit the vehicle to travel transversely of its forward-reverse direction and thus require only a minimum-width aisle between the stacks of material in a storage area being serviced by the vehicle.

3,785,516

GLASS JAR HANDLING SYSTEM

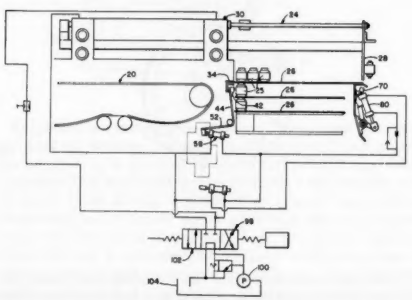
Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Division of Ser. No. 173,887, Aug. 23, 1971, Pat. No. 3,724,686

Filed Nov. 13, 1972, Ser. No. 306,269

Int. Cl. B65g *59/02*

U.S. Cl. 214—152 **3 Claims**



A system for use in depalletizing glass jars disposed in groups in a vertical stack wherein the groups of jars are successively moved laterally off the top of the stack and onto a lateral conveyor. The jars are supported on flat panels and a sensor is provided to sense the uppermost panel and to control the elevation of the stack, whereby the elevation will stop when the upper group of jars is aligned with the conveyor. Means is provided to push the jars away from alignment with the sensor so that it will engage the uppermost jar-supporting panel rather than the jars themselves. Means is also provided to push the upper panel laterally to assure that it will be in position to engage the sensor.

3,785,517

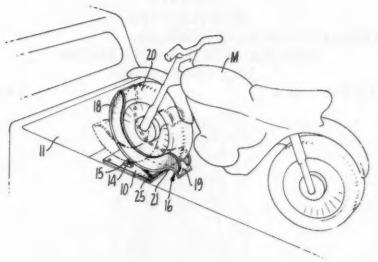
MOTORCYCLE CARRIER AND CHOCK

William D. Brajkovich, 4150 Del Curto Dr., Reno, Nev.

Filed Sept. 30, 1971, Ser. No. 185,296

Int. Cl. B60r *9/10*

U.S. Cl. 214—450 **2 Claims**



A sturdy light weight means for holding a motorcycle in upright rigid position during transportation in a truck, trailer, and the like which includes a base plate secured in the truck or trailer upon which a curved channel is pivotly mounted. The channel suitably receives the size and shape of the front wheel of a motorcycle and extends in supporting contact for not less than 180°. At the entry end of this channel there is a reverse curved channel integral and continuous therewith. This channel structure is pivotly mounted offset from its mid point, on the base for pivoting in a vertical plane. When the front wheel of the motorcycle is pushed into the entry channel and rides over the hump, the weight of the motorcycle wheel in the channel causes the channel to swing about the offset pivot and rock forward to securely hold the motorcycle wheel, with contact over 180°. The reverse curve of the entry end of the channel bears against the main frame of the motorcycle and prevents any lateral movement while the front wheel is so engaged. There is a pivoted chock plate mounted underneath the channel rearwardly of the pivot for the channel, which does not come into engagement with the transverse ridges of the base plate unless and until the motorcycle wheel is in its holding position within the channel. The chock plate is moved in an upward arc to disengage the same and permit the removal of the motorcycle from its holder.

3,785,518

SPARE TIRE CARRIER

Bernard Lee Johnson, 709 Locust Ave., Coeur d'Alene, Idaho

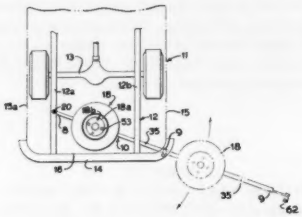
Filed Mar. 10, 1972, Ser. No. 233,615

Int. Cl. B62d *43/00*

U.S. Cl. 214—454 **5 Claims**

A spare tire carrier for use in removably mounting the spare tire of a wheeled vehicle to the vehicle's undercarriage at a location behind the rear axle. The carrier includes a pivotable

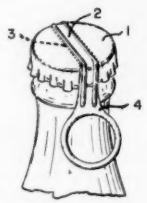
support means and telescoping members which allow easy removal of the tire from the storage position to a variety of extended delivery positions adjacent the vehicle outer periphery rearward of the rear axle.



3,785,519
BOTTLE CAPS

Nam Huh, 527½ 6th St., Braddock, Pa.

Filed Apr. 6, 1972, Ser. No. 241,746
Int. Cl. B65d *41/42*
U.S. Cl. 215—46 A **3 Claims**

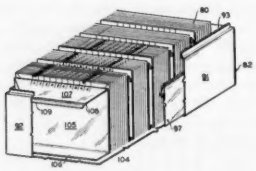


A bottle cap having an integral appendage which is pulled by hand to detach the bottle cap from the bottle.

3,785,520
FILING SYSTEM AND ELEMENTS THEREOF

Arthur T. Spees, Los Angeles, Calif., assignor to Visu-Flex Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 612,202, Jan. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 328,798, Dec. 9, 1963, Pat. No. 3,301,263. This application Dec. 8, 1969, Ser. No. 883,113
Int. Cl. B42f *17/08*
U.S. Cl. 220—22.1 **4 Claims**

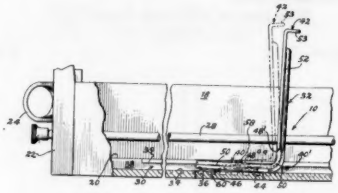


Filing cards provided with protuberances across a face designed to be disposed midway intermediate those of adjacent cards thereby spacing the cards in a file container permitting groups of cards to be manually flexed to give access to individual cards. A filing card container with card alignment members at each side, a removable compressible element at one end of the container, and compressible spacers located at intervals throughout a body of file cards, envelopes or other material, together with visual indexing indicia on the element and spacers for use in visual indexing of cards or microfiche.

3,785,521
FOLLOWER ASSEMBLY

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed May 8, 1972, Ser. No. 251,471
Int. Cl. B65d
U.S. Cl. 220—22.3 **4 Claims**

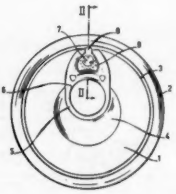


A follower assembly for use in combination with a card retaining tray including a channel portion extending longitudinally of a tray bottom wall and a follower portion. The follower portion features integrally formed guide and back-up plates; the guide plate being slideably supported within the channel portion and being punched out to define a downwardly and rearwardly extending tab normally retained in locking engagement with recesses formed in a bottom wall of the channel portion by a guide plate affixed leaf spring. The leaf spring has a cam surface adjacent its forward end, which is dimensioned for receipt within the recesses and spaced from the tab a distance corresponding to a multiple of the distance between adjacent recesses.

3,785,522
LID FOR EASY OPENING CANS

Gerard Prayer, and Jean-Marie Ferrat, both of La Fleche, France, assignors to Cebal GP, Paris, France

Filed Dec. 30, 1970, Ser. No. 102,761
Claims priority, application France, Jan. 8, 1970, 7000589
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **8 Claims**



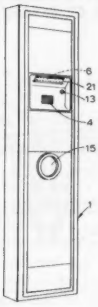
A lid for use in an easy open can including a lid panel provided with a weakened portion defining a tear line, a tab fixed to the lid panel near the tear line having an end portion adapted to cut into the lid panel and a concave rib formed in the lid panel adjacent to the tab to permit deformation of the lid panel when the tab is lifted during the opening of the can to prevent the tab from breaking off the lid panel.

3,785,523

DISPENSER FOR C-FOLDED PAPER TOWELS WITH HOT AIR DRYER

Arthur Goldstein, 375 Milton Rd., Cambridge, England

Filed Oct. 30, 1972, Ser. No. 301,880
Int. Cl. B65h 3/26
U.S. Cl. 221—42 3 Claims



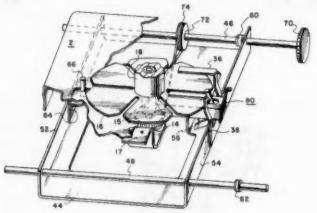
A hand drying appliance has a cabinet containing an air heating unit and a dispensing unit for individual paper towels. The cabinet has an air outlet communicating with the air heating unit so that heated air can pass to the outside of the cabinet. A magazine or holder is arranged inside the cabinet to contain a substantially vertical stack of C-folded paper towels. The cabinet also has a towel outlet through which the lowermost towel in the stack can be dispensed laterally of the stack. A dispensing member is arranged inside the cabinet beneath the magazine or holder. It engages the lowermost towel in the stack and moves it laterally through the towel outlet slot.

3,785,524

CAROUSEL ALIGNING APPARATUS

John D. Smith, Medford, N.J., assignor to Wellman Industries, Longview, Tex.

Filed May 1, 1972, Ser. No. 249,313
Int. Cl. B65g 59/00
U.S. Cl. 221—122 9 Claims



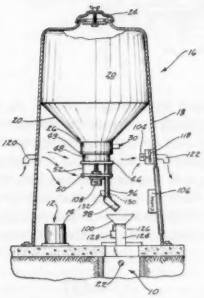
Disclosed is vending apparatus which includes a rotatable carousel for holding objects to be dispensed therefrom when the carousel is in any one of a plurality of different vending positions. The apparatus further includes a substantially circular index plate having a plurality of spaced slots each corresponding to a different vending position and each extending from near the center of the plate radially outward therefrom. Each slot has a substantially uniform width from near the center of the plate to a point near the perimeter thereof from which point the slot gradually widens to define a wedge-shaped introduction to the slot. The index plate is coupled to the carousel so that as the carousel is rotated the index plate is also rotated. The apparatus further includes a dispensing mechanism manually operable to dispense an object from the carousel. This dispensing mechanism includes an arm disposed near the perimeter of the index plate and extending in a direction substantially perpendicular to the plane defined by the index plate. As the dispensing mechanism is operated, the arm is caused to move toward the center of the index plate and to either engage the perimeter of the plate and prevent the complete operation of the dispensing mechanism (if the carousel is not within a certain angular distance of a vending position) or to engage a side of the introduction to a slot to cause rotation of the index plate and carousel into a vending position and enable complete operation of the dispenser mechanism (if the carousel is within that certain angular distance of a vending position).

3,785,525

CHEMICAL TABLET DISPENSING DEVICE FOR WELLS

George A. Handeland, Ringsted, Iowa, assignor to Safe Well Manufacturing Company, Albert City, Iowa

Filed Jan. 31, 1972, Ser. No. 221,920
Int. Cl. B65g 59/06
U.S. Cl. 221—265 12 Claims



A chemical tablet dispensing device for wells is disclosed herein and generally comprises a housing positioned over the well. A sealed tablet hopper is provided at the upper end of the housing for supplying chemical tablets to a metering device which is detachably mounted on the lower end of the hopper. The metering device includes a rotatable metering plate adapted to supply a chemical tablet to a communicating tube after predetermined periods of pump operation. Means is also provided to cause the metering device to supply the tablets to the well at predetermined times even if the pump is not being used. The communicating tube deposits the chemical tablet into the well to treat the water therein. Electrical control means is provided for controlling the rotation of the metering plate so that the metering plate is rotated at a predetermined rate during actual pump operation. Means is also provided for preventing moist air from the well from damaging the componenets of the device.

3,785,526

DISPENSING APPARATUS

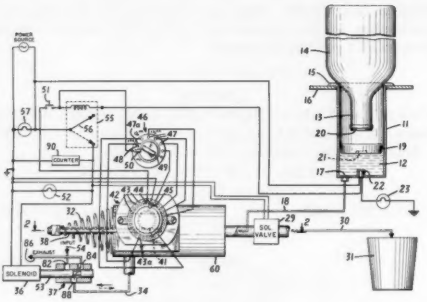
David M. Shinn, Red Bank, N.J., assignor to Autobar Systems Corporation, Red Bank, N.J.

Filed Aug. 7, 1972, Ser. No. 278,471
Int. Cl. B67d 5/30
U.S. Cl. 222—14 9 Claims

An apparatus for dispensing pre-selected amounts of liquid includes a cylinder having at one end an inlet valve coupled to a reservoir and an outlet valve for delivery of the liquid. A piston is normally retained by a spring adjacent the other end of the cylinder. Delivery is effected by supplying a compressed gas, via a solenoid actuated valve, to the space between the other end of the cylinder and the piston to drive the piston towards the outlet valve end. At the same time, the outlet valve is opened to allow discharge of the liquid. Movement of

the piston stops after delivery of the preselected amount, the outlet valve closes, and the spring returns the piston to its normal position, the reverse movement of the piston opening the inlet valve and refilling the cylinder from the reservoir.

A manually settable selector switch and a companion servoswitch actuated by movement of the piston cooperate to meter delivery. The manual selector is set to a position corresponding to the amount desired and the compressed air sole-



noid valve actuated by closing a switch. As the piston moves forward in the cylinder, a wiper on the servoswitch advances until it reaches a contact corresponding to the position set on the manual selector. At that point, the solenoid valve is de-energized, delivery is stopped and the piston is returned to its initial position. Various circuit features are provided to indicate the state of operation of the device, the cumulative amount of liquid dispensed and an empty reservoir.

3,785,527

APPARATUS TO CONTROL FEED OF MATERIAL TO AN EXTRUDER

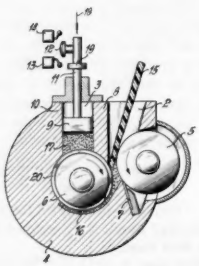
Wilhelm Brand, Hannover, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Apr. 10, 1973, Ser. No. 349,683

Claims priority, application Germany, Apr. 14, 1972, P 22 18 087.6

Int. Cl. G05g *9/100*

U.S. Cl. 222—56 **4 Claims**



Control apparatus to control feed of material to an extruder, particularly rubber or plastics material, comprising a housing for a feed screw, a hopper formed as a material feed aperture in the housing and divided into two portions by a baffle seated with a tight seal on the feed screw, a first of the two portions receiving material to be extruded and feeding said material into said second portion, which second portion contains a piston to maintain the material in the second portion in compacted form, means feeding material to the first portion being controlled in dependence upon the position of the piston in the second portion.

3,785,528

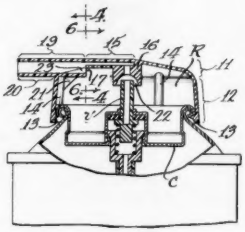
AEROSOL DISPENSING DEVICE

Stanley T. Mandeltort, Highland Park, Ill., assignor to VCA Corporation, Greenwich, Conn.

Filed Aug. 21, 1972, Ser. No. 282,475

Int. Cl. B65d *83/14*

U.S. Cl. 222—148 **5 Claims**



An aerosol dispensing cap unitarily formed from a flexible and elastic material to provide a dome shaped diaphragm, a central hub and discharge outlet tube, the dispensing outlet tube having an integral valve midstream which permits communication between the tube and volume beneath the cap in the unactuated position, the hub being ported to the tube and releasably chambered to engage and open the aerosol valve when depressed, the volume beneath the cap forming a reservoir of negative pressure when the cap is depressed, causing aerosol material in the tube, and valve stem to be drawn into the reservoir.

3,785,529

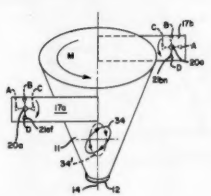
FLOWABLE MATERIAL STORAGE MEANS

George D. Dumbaugh, Louisville, Ky., assignor to Vibranetics, Inc., Louisville, Ky.

Filed Oct. 29, 1971, Ser. No. 193,675

Int. Cl. B65g *65/68*

U.S. Cl. 222—161 **16 Claims**

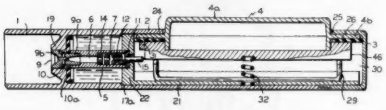


This invention provides improved means for storing a flowable material. Basically, the storage means provided by the present invention comprises container means for containing a flowable material arranged generally vertically and having a bottom opening through which the material can be discharged, in combination with mounting means for supporting the container means for limited movement relative to its generally vertical axis and drive means for independently first twisting the container means about its generally vertical axis and then moving the container means along that axis such that the material is induced to move within the container means and caused to flow through the bottom discharge opening at a generally uniform rate.

3,785,530
COMPRESSED AIR OPERATED DISPENSER WITH AIR COMPRESSION PISTON MEANS MOVABLE LATERALLY OF THE DISPENSER

Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 240,025, March 31, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,877
Int. Cl. B67d 5/54
U.S. Cl. 222—193 5 Claims

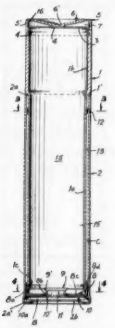


A compressed air actuated dispensing device has a valve assembly having a valve body with a compressed air flow path therethrough and a valve member movable in the valve body and obturating the compressed air flow path. Aspirating means is provided at one end of the compressed air flow path, and a product containing means in the device feeds product through a product flow path to the aspirating means. A hollow elongated compression chamber portion has one end around the other end of the compressed air flow path, and a piston means is movable into and out of the compression chamber portion transversely of the direction of elongation thereof for compressing air therein. Extension means on the valve member is engageable by the piston means when the piston means is at the extreme inward end of its movement for moving the valve member for opening the compressed air flow path only after air in the compression chamber portion has been compressed.

3,785,531
POWDER SPRAY APPLICATOR DEVICE

Jean C. Y. Brenez, 149 Avenue de General-Leclerc, Pessac, France

Filed Mar. 24, 1972, Ser. No. 237,636
Claims priority, application France, Apr. 15, 1971, 7114241
Int. Cl. B05b 7/00
U.S. Cl. 222—193 8 Claims

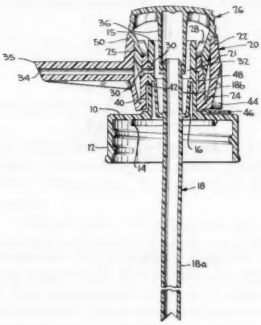


The invention relates to a powder application device having a cylindrical outer casing in which is telescoped a cylindrical inner casing. One end of the outer casing is closed by a transverse wall and the opposed end of the inner casing is also closed by a transverse wall having a central opening controlled by a valve. The other end of the inner casing has a transverse wall having a central opening which is also controlled by a valve.

3,785,532
DISPENSING PUMP

Rex C. Cooprider, Hacienda Heights, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed Nov. 27, 1972, Ser. No. 309,717
Int. Cl. B65d 37/00
U.S. Cl. 222—207 15 Claims

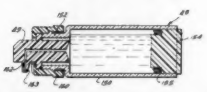


A dispensing pump for application to a container of product to be dispensed comprising an annular housing member formed with a concentric annular recess open at one axial end thereof. A flexible bulbous diaphragm has an annular skirt received in fluid-tight manner in said recess and closing said one axial end of said annular member to define therewith a variable volume pump chamber. Entering the other end of said annular member is a fluid inlet passage. Valve means integrally carried by said diaphragm within the pump chamber function to close said passage in response to axial deformation of the diaphragm. This annular skirt has a free lower edge portion within said recess normally covering a discharge port through said annular member which communicates with the pump chamber and said lower edge portion and said recess are mutually conformed to permit radial outwardly deflection of said edge portion to uncover said discharge port in response to a given fluid pressure within the pump chamber.

3,785,533
COOMBS SERUM CARTRIDGE WITH INDEXING MEANS

Joseph N. Genese, Paterson; Edward J. Rapoza; Charles F. Galanaugh, both of Butler; Harry M. Kennard, Chester; Roger A. Chevalez, Rockaway, and John A. Smith, East Orange, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 32,915, April 29, 1970, Pat. No. 3,605,829. This application July 8, 1971, Ser. No. 160,868
Int. Cl. G07f 11/00
U.S. Cl. 222—327 6 Claims



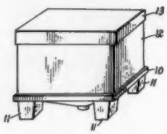
A cartridge containing Coombs serum comprises a tubular barrel which is closed at its forward end by a nozzle and at its rear end by a cylindrical piston positioned within the bore of the barrel. The nozzle includes surfaces indexing the cartridges in a Coombs serum injecting machine. The mechanism includes a plunger for driving the piston into the bore of the barrel to dispense the liquid from the forward nozzle.

3,785,534

DISPENSING SHIPPING CONTAINER WITH FUNNEL-TYPE PALLET

William R. Smith, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed July 14, 1972, Ser. No. 271,720
Int. Cl. B67c 11/00
U.S. Cl. 222—460 4 Claims



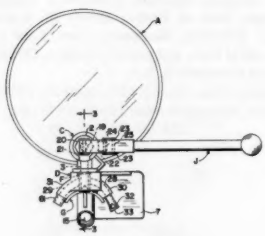
A dispensing shipping container for transporting and dispensing flowable materials in bulk quantities is provided by a base in the form of a pallet having legs and including downwardly and inwardly sloping walls which terminate in a dispensing opening. A container body is positioned on the pallet and includes a plurality of sidewalls which rest upon the pallet and which together with the pallet define the container volume. A suitable cover means is provided to prevent contamination by foreign materials of the material carried by the container. Preferably the pallet is a unitary structure and includes hollow legs which permit a multiplicity of pallets to be stacked in closely spaced relationship and in nested condition. Suitable closure means can be provided to prevent inadvertent dispensing of the material carried by the container.

3,785,535

SELECTIVE OUTLET PUMP FOR FILLING DIFFERENT TYPES OF MASTIC-APPLYING TOOLS

Robert G. Ames, Hillsborough, Calif., assignor to Bliss Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed Sept. 7, 1971, Ser. No. 178,340
Int. Cl. G01f 11/42
U.S. Cl. 222—331 4 Claims



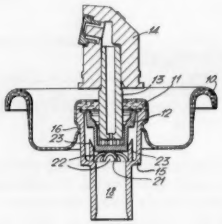
A selective outlet pump for filling different types of mastic-applying tools in which a three-way valve is mounted in the outlet of the pump for directing the mastic to issue from the desired outlet orifice. Different types of mastic-applying tools require different methods for filling the tools with mastic and this in turn requires specially designed outlet nozzles that can be used for this purpose. The three-way valve will deliver mastic to only one outlet at a time.

3,785,536

MEANS FOR SPRAYING LIQUID SUBSTANCES IN ATOMISED FORM

Cecil Robert Montgomery Graham, Lagonda Ave., Killara, New South Wales, Australia

Filed Oct. 21, 1971, Ser. No. 191,254
Int. Cl. B65d 83/14
U.S. Cl. 222—402.21 5 Claims



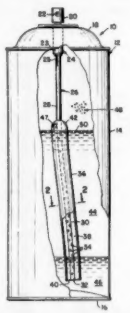
Valve means for an aerosol container in which upstanding resilient members are provided to contact a lateral wall portion of a cupped flange upon actuation of the valve means such that the cupped flange will more rapidly be returned to a position closing the aerosol container against egress of its contents.

3,785,537

DISPENSER FOR IMMISCIBLE LIQUIDS

Vernon L. Appleby, 660 Scofield Ave., and William P. McNutt, 334 Whitman Ct., Palo Alto, both of Calif.

Filed Dec. 3, 1970, Ser. No. 94,926
Int. Cl. B65d 83/00; B67d 5/60
U.S. Cl. 222—464 8 Claims

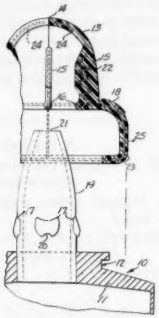


Apparatus for dispensing two immiscible liquids comprising a container having a fluid exit nozzle and a tubular stem for coupling the nozzle with the interior of the container. A lower segment of the stem is perforate and is surrounded by and spaced inwardly from an imperforate sleeve. The lower end of the sleeve is open and its upper end is closed. A valve across the path defined by the upper segment of the stem controls the flow of liquids to the nozzle and means is provided to cause a liquid flow to the nozzle when the valve is opened.

3,785,538
FINGER-ACTUATED SNAP OPEN CAPS FOR BOTTLES, COLLAPSIBLE TUBES AND THE LIKE

Anthony J. Cocozella, 26 Wyman Rd., Braintree, Mass.

Filed June 2, 1972, Ser. No. 258,980
Int. Cl. B65d *47/27*
U.S. Cl. 222—490 **4 Claims**

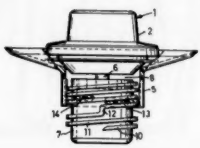


A deformable plastic dispensing cap of the snap-on type wherein a retractable dome covers a dispensing cylinder which is in communication with the interior of the container or tube. The upper portion of the dome is provided with partable lips, which expose the cylinder when parted, for dispensing the contents of the container or tube. To retain the dome lips in the retracted position, the interior of the dome is provided with ribs having projections thereon for engaging bosses provided on the outer periphery of the dispensing cylinder. The base portion of the cap which is integrally formed with the dome portion, snaps over the shoulder portion of the container or tube and is rotatable in the shoulder portion groove. The base portion of the cap is provided with finger gripping projections which enable a user of the cap to grip the projections, exert force downwardly thereon parting the dome lips and exposing the dispensing orifice of the cylinder, rotate the cap assembly until the projections in the ribs engage the bosses and release the base portion, causing the projections to snap into position in detents provided in the bosses. The cap assembly will then be retained in the open position until the base portion is again rotated, releasing the rib projections from the cylinder bosses, permitting the dome lips to snap back into their closed position.

3,785,539
THREAD ARRANGEMENT FOR CLOSURE PLUGS

Stig Johan Emanuel Wetterek, Mullsjo, Sweden, assignor to AB Mullsjo Plast, Mullsjo, Sweden

Filed May 30, 1972, Ser. No. 257,660
Int. Cl. B67d *3/00*
U.S. Cl. 222—552 **2 Claims**

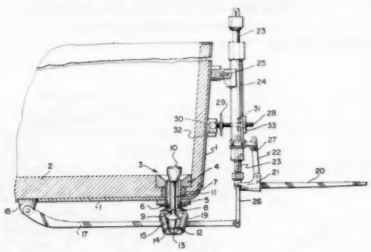


The invention relates to a thread arrangement for screw-on plugs for thermos flasks and other liquid containers, comprising a plug being in thread engagement with a sleeve connected to the neck of the flask or container. The threads of the plug have two leads, and are within a section cut-away around approximately half the circumference. At the beginning of said cut-away portion the end of one thread is connected by means of an intermediate portion with the beginning of the other, overlying thread. The threads of the sleeve comprise two thread portions extending around approximately half the circumference, and being in non-overlapping relationship to form a generally axial groove enabling the plug to be unscrewed to a stop position in which liquid can be poured from the flask, but from which position the plug must be axially displaced before being unscrewed clear of the flask or container.

3,785,540
GOLF TEE TYPE STOPPER FOR MOLTEN METAL DISCHARGING

William C. Donnithorne, and William E. Creswick, both of Sault Saint Marie, Ontario, Canada, assignors to The Algoma Steel Corporation, Limited, Sault Saint Marie, Ontario, Canada

Filed May 26, 1972, Ser. No. 257,446
Claims priority, application Canada, May 24, 1972, 142834
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 **25 Claims**



A stopper means for use in controlling the flow of molten metal through the teeming aperture of a bottom pouring ladle, said stopper means being movable between a closed and open position when in said aperture, said stopper means comprising a neck of heat resistant material, such as zirconia, dimensioned to extend through the teeming aperture with a gap therebetween, an enlarged head attached to one end of said neck and adapted to close the teeming aperture in the closed position thereof and a dispenser attached to the other end of said neck having channels extending therethrough in a direction generally axially of said neck, said channels generally converging to a point remote from said neck whereby when said stopper means is located in said aperture, said head is located in said ladle and said dispenser is located beneath said ladle.

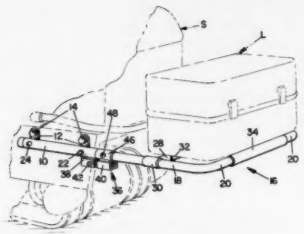
3,785,541
FOLDABLE JACK AND/OR BAGGAGE CARRIER FOR A SNOW MOBILE

Louis F. Sibley, Ware, Mass., assignor to Gillespie Corp., Ware, Mass., a part interest

Filed June 30, 1972, Ser. No. 267,922
Int. Cl. B60r *9/06*
U.S. Cl. 224—42.08 **1 Claim**

An attachment for the tail end of a snow mobile comprising a frame slidable relative to the snow mobile between a collapsed non-use position and a partially extended use position

for supporting luggage or baggage, the frame additionally being movable into a fully extended position wherein it may be



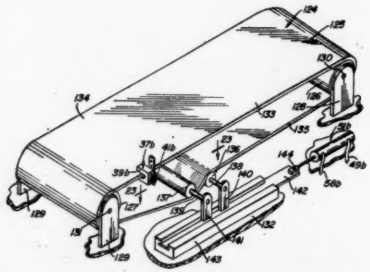
swung downwardly to function as a jack or stand for supporting the tail end of the snow mobile off of the ground.

3,785,542

WEB-GUIDING APPARATUS AND POSITION-SENSING AND CONTROL UNIT THEREFOR

Ferenc Edes, Bolingbrook, and Henry L. Gianatasio, River Forest, both of Ill., assignors to Air-Trol Systems, Inc., Addison, Ill.

Division of Ser. No. 203,594, Jan. 1, 1971.
Filed Feb. 22, 1973, Ser. No. 334,760
Int. Cl. B65h *25/26*
U.S. Cl. 226—22 **3 Claims**



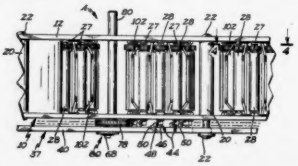
A web-guiding apparatus and position-sensing and control unit therefor for use in sensing and maintaining the proper position and alignment of a web of paper or like flexible sheet material unwound from a roll thereof mounted on a web-supporting roll or cylinder which, in turn, is mounted on a movable supporting frame or carriage for use with web-laminating or sheet-laminating apparatus for laminating a first sheet or web of flexible sheet material, such as paper, plastic resinous film, or the like, to a second sheet or web of the same or comparable flexible sheet material, and for similar purposes, such as sensing and maintaining the proper position of an endless belt conveyor. The supporting frame or carriage is movable transversely of the web of sheet material by hydraulically actuated power means which is under the control of pneumatic pressure-applying means so as to maintain proper alignment of the web and its lateral or side marginal edges during movement of the web during the operation of laminating the first web of flexible sheet material to a second web of flexible sheet material, or when the web is moved for other purposes. The pneumatic pressure-applying means is under the control of air flow control valve means which, in turn, is under the control of pneumatically controlled web-misalignment and position sensing means which senses and is responsive to the normal proper operating position of a marginal or lateral edge portion of the web of flexible sheet material, and to lateral movement thereof during lengthwise movement of the web. The position-sensing means or unit controls the operation of the air flow control valve means for the pneumatic pressure-applying means and actuates the pneumatic pressure-applying means and the hydraulically actuated power means so as to move the movable roll-supporting frame or carriage and the roll of flexible sheet material mounted thereon transversely of the long axis or direction of travel of the web to correct lateral misalignment or movement of the web and thus maintain the web of flexible sheet material in its normal and proper operating position. The position-sensing means or unit maintains the air flow control means in normally closed position and the pneumatic pressure-applying means inactive when the web of flexible sheet material is in its normal and proper operating position.

3,785,543

DRIVING MECHANISM FOR ROLLER TRANSPORTING DEVICES

Conrad E. Lee, Mound, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Feb. 1, 1972, Ser. No. 222,544
Int. Cl. B65h *17/20*
U.S. Cl. 226—188 **4 Claims**



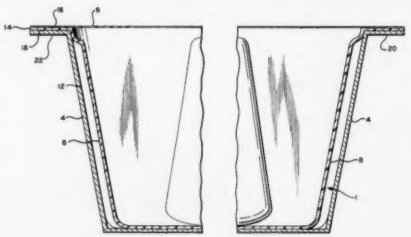
A driving mechanism for roller transporting devices in which spaced pairs of substantially contacting rollers transport material therebetween, said mechanism including a plate actuated for movement in the plane thereof to cause each point of said plate to rotate in a circle of the same diameter and about parallel axes with members on said plate cooperating with cranks on one end of one roller of each pair of rollers to effect rotation of said rollers together with intermeshing spur gears on the rollers at the other ends thereof rotating the other rollers of each pair.

3,785,544

TRAY WITH STRENGTHENING MEMBER

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1972, Ser. No. 253,004
Int. Cl. B65d *5/62*
U.S. Cl. 229—14 BE **5 Claims**



An article of manufacture comprising in combination, a rectangularly shaped tray having sloping sidewalls terminating in a flanged rim, a film closure sealed to the top of the tray rim, and a U-shaped strengthening member having a first flange portion sealed to a lower rim surface on one side of the tray, extending downwardly across the bottom of the tray and

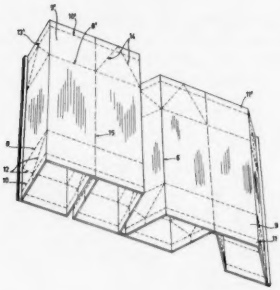
upwardly to the lower surface of the rim on a second side of the tray wherein a second flange portion of the U-shaped sheet is sealed thereto.

3,785,545

COLLAPSIBLE MULTI-COMPARTMENT CONTAINER

Jean Roussel, Caluire, France, assignor to SCAL, Societe de Conditionements en Aluminium, Paris, France

Filed Jan. 17, 1972, Ser. No. 218,416
Claims priority, application France, Jan. 18, 1971, 7101528
Int. Cl. B65d
U.S. Cl. 229—51 DB **8 Claims**



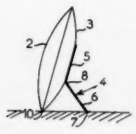
A collapsible multi-compartment container having a plurality of prismatic compartments and adapted to lie flat when empty, formed of a pair of superposed panels joined to each other along their transverse edges and at regular intervals in a direction substantially perpendicular to the longitudina edges, at least one fold line extending across the width of the panels and at least one fold line extending along at least the longitudinal edge of each panel to define continuous strip means adapted to form closure flaps for each compartment.

3,785,546

UPSTANDING FLEXIBLE PACKING AND METHOD OF MANUFACTURING SAME

Rene Kuster, Heimsbrunn, France

Filed July 27, 1971, Ser. No. 166,451
Claims priority, application France, Aug. 5, 1970, 7029609
Int. Cl. B65d *61/00*
U.S. Cl. 229—53 **12 Claims**



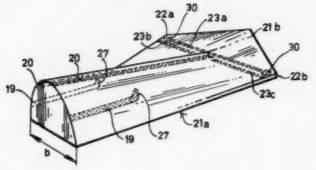
This flexible packing, notably for foods and like products, whether solid or liquid, is adapted to stand upright or substantially upright through the addition of a rigid element acting as a stand and consisting essentially of a pair of hingedly interconnected flaps, one flap being attached to one edge or wall of the packing.

3,785,547

PLASTIC BLOCK BAG WITH A VALVE

Jan Roelof Jochum Hendrik De Vries, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N.V., Handellaan, Zwolle, Netherlands

Filed June 18, 1971, Ser. No. 153,474
Claims priority, application Netherlands, June 17, 1970, 7008908
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 **4 Claims**



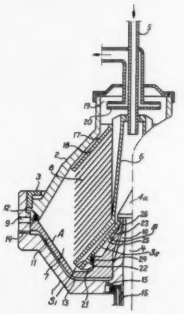
A block bag with a filling valve in which heat seals connect the flap constituting the valve with bottom flap parts such that the shortest distance between the heat seals is equal to or greater than the distance between the side edges formed by the inwardly folded bottom flap parts.

3,785,548

CENTRIFUGE WITH INTERMITTENT SLUDGE DISCHARGE

Klaus Hans Dieter Stroucken, Ronninge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed July 7, 1972, Ser. No. 269,845
Claims priority, application Sweden, Oct. 4, 1971, 12481/71
Int. Cl. B04b *3/02*
U.S. Cl. 233—20 A **3 Claims**

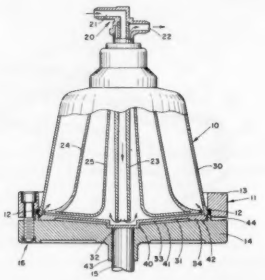


Sludge is discharged intermittently from the centrifugal rotor under control of a hydraulically actuated piston valve movable axially of the rotor. The piston valve has a radially inner area facing the rotor's separating chamber and partly defining a space within the rotor, and means are provided for maintaining this space free of liquid and thereby reducing the hydraulic pressure tending to shift the piston valve to its sludge-discharging position.

3,785,549
CENTRIFUGE CHUCK FOR DISPOSABLE, SNAP-IN CENTRIFUGE ROTOR

Allen Latham, Jr., Jamaica Plain, Mass., assignor to Haemonetics Corporation, Natick, Mass.

Filed July 31, 1972, Ser. No. 276,677
Int. Cl. B04b *9/00*
U.S. Cl. 233—23 R **8 Claims**

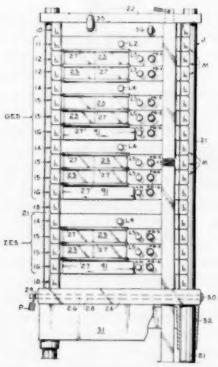


A chuck suitable for holding a disposable centrifuge rotor during centrifuging and requiring only minimum skill to place in position. Once the rotor is snapped into position on the chuck it is held by an elastomeric gripping member. The base of the rotor is designed to effect this holding. In removing the rotor, only a manual tipping action involving a modest horizontal force near the top of the rotor is required. The chuck is simple and inexpensive; and it does not require any great deal of technical skill to operate.

3,785,550
VOTING MACHINE

Roy A. Martin, and Clarence E. Pittman, both of Atlanta, Ga., assignors to Lectra Data, Inc., Atlanta, Ga.

Continuation of Ser. No. 755,688, Aug. 27, 1968, abandoned.
This application Nov. 28, 1972, Ser. No. 310,127
Int. Cl. G07c *13/00*
U.S. Cl. 235—50 R **5 Claims**

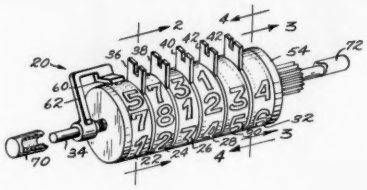


Apparatus for selectively producing electrical pulses representative of a particular selection made by the operator of the apparatus. The apparatus is disclosed in the form of a voting machine built up of modular components which fit together to form any of a plurality of different voting arrangements. The voting machine is substantially tamper-proof and has the following basic components: an input module, a frame assembly, a first control module, a first vote module, a second control module, a second vote module, a terminal module, a write-in module, a slave input module, and a third control module. The modules may be placed together in selected fashion to define a voting machine for voting in any type of political race and which will prevent overvoting. The different modules fit together in such manner that they cannot be separated without a key to unlock the same, thereby reducing the possibility of tampering with the election results. Moreover, each module is constructed in such manner that the module may be checked prior to assembly of the voting machine to insure proper functioning of the module once it is assembled.

3,785,551
TAMPER-PROOF ODOMETER

Thomas Regan, 4534 43rd Place, N.W., Washington, D.C.

Filed Nov. 10, 1972, Ser. No. 305,285
Int. Cl. G01c *22/00*
U.S. Cl. 235—95 **3 Claims**

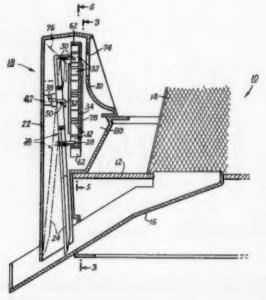


A tamperproof odometer for displaying mileage of an automobile of the type having a plurality of digit wheels driven by gears mounted on gear carrier plates, both gear plates and wheels mounted on a shaft with the plates separating adjacent wheels wherein the shaft is noncircular permitting rotation of the wheels but not the carrier plates, the wheels are prevented from being driven backward to decrement the displayed mileage, both ends of the shaft are terminated in sleeves irremovably fixed to hold the wheels in place and a marker is provided on the largest digit wheel for marking the digits on that wheel as it rotates.

3,785,552
SCORE KEEPER

Calvin L. Payne, Jr., Hastings-on-Hudson, N.Y., assignor to Tudor Metal Products Corporation, Brooklyn, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,956
Int. Cl. A63b *71/06*
U.S. Cl. 235—98 R **1 Claim**



A score keeping device typically used as an accessory to parlor board games of the hockey action type. The device is

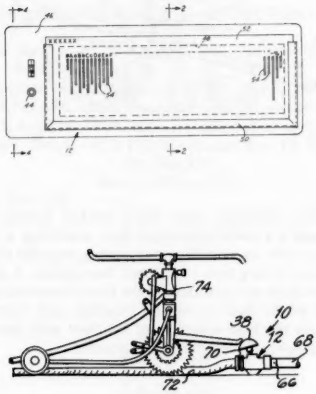
actuated by a puck as it travels from a simulated cage to cause a spring powered dial to turn one increment indicative of the new score. The dial is uniquely designed whereby a light switch will be automatically operated by the dial each time a score is made to call attention to that fact as is the case in the actual arena.

3,785,553

APPARATUS FOR DETERMINING THE UNIT VALUE OF A LINE OF TYPE CHARACTERS

Willard D. Brown, 324 S. Salem, Aurora, Colo.

Filed June 8, 1973, Ser. No. 368,171
Int. Cl. G06c 27/00
U.S. Cl. 235—80 **5 Claims**



Apparatus useful for determining the proper point size of type to set for a given copy which must fit within a given line length. A perforated endless belt or screen is operatively trained about a pair of end rolls within a boxlike housing. One run of the belt passes beneath an opening in the top or cover plate of the housing, which opening extends for substantially the entire transverse width of the belt. A card having a series of parallel slots is adapted to be received within a card locating means on the cover plate with the slots of the card encompassed within the boundaries of the opening. Each slot extends longitudinally of the adjacent run of the belt and is of a length proportional to the width of a character or letter of type. Different cards are provided for different type styles. With the card in position on the housing, a stylus is inserted through a slot in the card and engaged with the perforated belt or screen. The belt is then manually advanced by the stylus for a distance corresponding to the full length of the slot. By successively inserting the stylus through a plurality of slots to advance the belt corresponding to the letters or characters of the given copy, the belt is moved a total distance representative of a total "unit value" for the copy. This distance of advancement is indicated by a counter operatively coupled to one of the belt end rolls.

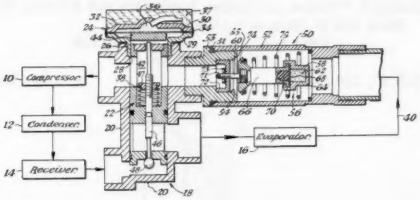
The "unit value" thus obtained is then divided into a number representative of the given or required line length to obtain a number called the "set width factor." The "set width factor" thus obtained is then applied to a chart which indicates the particular point size of type required to fill the given line length with the given copy.

3,785,554

TEMPERATURE RESPONSIVE THROTTLING VALVE

Robert H. Proctor, Richmond, Ind., assignor to Jackes-Evans Manufacturing Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 75,713, Sept. 25, 1970, Pat. No. 3,691,783, which is a continuation of Ser. No. 795,828, Feb. 3, 1969. This application Dec. 4, 1970, Ser. No. 95,260
Int. Cl. F25b 41/04
U.S. Cl. 236—34 **9 Claims**



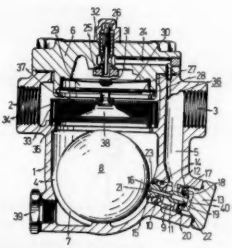
The present disclosure relates to an automotive air conditioner system which is arranged to have a throttle valve including a temperature-responsive power operating means situated in the refrigerant suction line for throttling refrigerant flow from the evaporator when the evaporator temperature drops toward a value low enough to cause ice formation on the evaporator fin surfaces. The throttle valve is preferably but not necessarily located upstream of the actuator means of the thermostatic expansion valve. The power operating temperature responsive means includes a wax filled container and a slidable piston which cooperatively move a valve member toward a valve seat when the temperature of the refrigerant in the suction line decreases to a moisture freezing level. The throttling effect prevents the compressor from pulling down the pressure and temperature within the evaporator to a level where ice or frost could form on the surfaces of the fins of the evaporator.

3,785,555

STEAM TRAP OF THE FREE FLOAT TYPE

Katsuji Fujiwara, No. 191, Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo, Japan

Filed Sept. 6, 1972, Ser. No. 286,817
Int. Cl. F16t 1/20
U.S. Cl. 236—53 **6 Claims**



In a steam trap a condensate sump is located in the lower part of a chamber formed by the main body of the trap. A free float is located in the chamber and closes off a port between the sump and a discharge passage which is connected at its opposite end to an outlet from the trap. Mounted in the port is a valve seat member which forms a passageway from the port to the discharge passage and a piston valve member is located within the valve seat member for controlling flow to the discharge passage. At its opposite end from the sump, the piston valve member forms with the main body and a valve

seat holder, a pressure chamber connected to the sump through a passageway in the piston valve member. When the float is displaced from the port by the condensate, a flow of the condensate enters the pressure chamber and displaces the piston valve member axially so that the condensate passes through the valve seat member into the discharge passage.

3,785,556

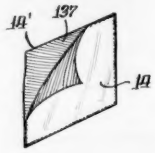
PACKAGING APPARATUS, METHOD AND PRODUCT

Lucius D. Watkins, c/o Horton, Davis, McCaleb & Lucas, Suite 2040, 230 W. Monroe St., Chicago, Ill.

Filed Aug. 5, 1971, Ser. No. 169,439

Int. Cl. A611 *9/04*

U.S. Cl. 239—6 **20 Claims**



Apparatus and method of packaging liquids wherein an elongated plastic envelope, sealed at one end, is filled with liquid under predetermined static pressure and a selected liquid-filled portion thereof is then heat-sealed and severed from the remainder of the envelope; the liquid being isolated from the heat-sealing and severing zone during such operations to prevent heating the liquid to boiling or gasifying temperatures.

3,785,557

CLOUD SEEDING SYSTEM

William C. Womack, Lafayette, Colo., assignor to Colspan Environmental Systems, Inc., Boulder, Colo.

Filed Dec. 21, 1972, Ser. No. 317,174

Int. Cl. A01g *15/00*

U.S. Cl. 239—14 **11 Claims**

A cloud seeding system comprising a solid propellant rocket motor boosted vehicle and means for launching the vehicle for transporting cloud seeding material to clouds for increasing precipitation and/or suppressing hail growth. The vehicle comprises a pyrotechnical booster element and a seeding material carrier or dart element, automatically separable from each other, the booster element being provided with an automatically releasable parachute or other means for retarding the speed of fallout consisting of the booster motor and an interstage coupling between the two elements released after burnout of the booster and separation of the two elements. Launching means are provided for directing the trajectory of the motor boosted vehicle.

3,785,558

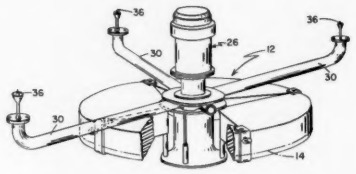
SINGLE FLOAT WATER COOLER

George W. Albritton, Houston, and Ronald C. Wendt, Seabrook, both of Tex., assignors to Ashbrook Corporation, Houston, Tex.

Filed Sept. 27, 1972, Ser. No. 292,721

Int. Cl. B01f *5/20*; **E03b** *9/20*

U.S. Cl. 239—16 **5 Claims**



Single float, multiple spray water coolers having a load waterline and a central cylindrical duct providing a vertical flow passage with an axial flow non-sealing impeller mounted therein and a driving motor mounted thereabove. A plurality of water conduits are mounted on the float connected at their inner ends to the duct above the impeller, and extend outwardly above the load waterline of the float with their outer ends having upwardly directed spray nozzles.

3,785,559

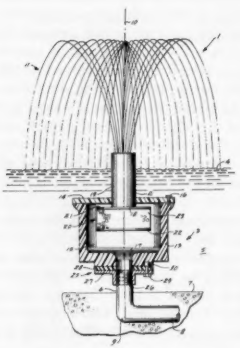
AXIAL FLOW FOUNTAIN BASE

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Continuation-in-part of Ser. No. 87,886, Nov. 9, 1970, Pat. No. 3,705,686. This application Nov. 24, 1972, Ser. No. 309,337

Int. Cl. B05b *17/08*

U.S. Cl. 239—17 **1 Claim**



A fountain base includes a housing which defines a symmetrical internal chamber. An inlet opening and an outlet opening

to and from the chamber are formed coaxially of the chamber through opposite ends of the chamber. Means are provided for mounting a water discharge nozzle to the housing coaxially of the chamber outlet opening. Liquid flow controlling means are operatively associated with the path of liquid flow through the chamber from the inlet opening to the outlet opening, and are proportioned and arranged for causing liquid flowing along the path at the outlet opening to have an essentially laminar flow characteristic and an essentially uniform liquid flow pattern. The flow controlling means include the proportioning of the chamber to have a mean cross-sectional area in a plane transverse to the axis of symmetry which is substantially greater than the effective area of the inlet opening.

3,785,560

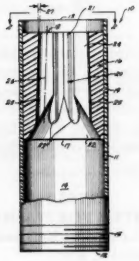
NOZZLE FOR DISCHARGING LIQUIDS CONTAINING SOLID MATTER

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Continuation-in-part of Ser. No. 87,886, Nov. 9, 1970, Pat. No. 3,705,686, which is a continuation-in-part of Ser. No. 242,663, April 10, 1972, and a continuation-in-part of Ser. No. 304,244, Nov. 6, 1972. This application Nov. 15, 1972, Ser. No. 306,528

Int. Cl. B05b *17/08*

U.S. Cl. 239—17 **19 Claims**



A water discharge nozzle has particular utility as a fountain nozzle in situations where the water supply to the nozzle has solid matter entrained therein. The nozzle includes an elongate tubular body which has outlet and inlet openings across opposite ends thereof. Annular plug means are disposed in the body adjacent the outlet opening and are engaged about their circumference in intimate engagement with the inner walls of the body. The plug means define a single passage therethrough, the passage being composed of a substantially circular hole which extends from the apex of substantially conical recess in that end of the plug which is located adjacent the inlet opening. The recess is concave to the inlet opening. A plurality of flutes are formed in the walls of the hole and extend with the hole from the recess to the end of the plug means located adjacent the outlet opening. Each flute has opposing wall surfaces disposed in non-diverging relation proceeding radially away from the hole axis.

3,785,561

DEVICE FOR THE EMISSION OF VOLATILE PRODUCTS

Maurice Confino, Chemin des Greffieres 69, Saint Cyr au Mont d'Or, and Gerard Godard, Route de Condrieu 38, Venissieux, both of France

Continuation-in-part of Ser. No. 883,312, Dec. 8, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,289

Int. Cl. A24f *25/00*

U.S. Cl. 239—60 **14 Claims**

A device for diffusing an active substance such as a odorant or insecticide into the atmosphere at a substantially uniform rate. The device comprises a block impregnated with the substance. The block consists of a plurality of slabs, for example, of a gelatine or cellulose derivative, suitably held together.

3,785,562

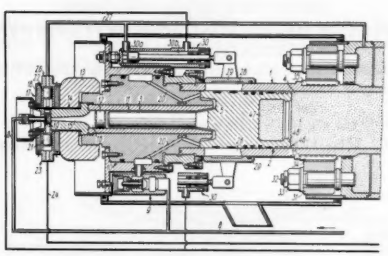
APPARATUS FOR PRODUCING IMPULSE LIQUID JETS

Alexandr Ivanovich Petrakov, prospekt Zoi Kosmodemyanskoi, 35; Nikolai Grigorievich Vereskunov, ulitsa Universitetskaya, kv. 39, and Mikhail Mitrofanovich Galitenko, ulitsa Planovaya 2, all of Donetsk, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,239

Int. Cl. F02m *47/02*; **E21c** *37/12*

U.S. Cl. 239—92 **5 Claims**



The apparatus comprises a cylinder with a ram dividing the cylinder into two chambers, one admitting compressed gas and the other a liquid under pressure.

Accelerated by compressed gas, the ram delivers an impact to the liquid contained in a high-pressure chamber contiguous with the second chamber of cylinder and spouted out in a jet through a passage in this chamber.

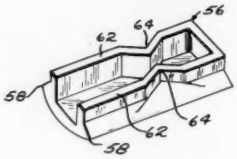
The ram is returned into its initial position by a liquid fed into the second chamber of cylinder; secured in the first chamber of cylinder is a controllable arrangement for arresting the ram, as reset ready for operation, during the period required to discharge the liquid from the second chamber by the moment the ram starts its movement due to the action of compressed gas.

3,785,563

SHUT-OFF DEVICE FOR TRAVELING SPRINKLER

Steven E. Maple, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed May 8, 1972, Ser. No. 251,261
Int. Cl. B05b 3/00
U.S. Cl. 239—183 10 Claims



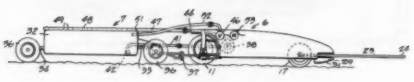
A device adapted to be connected to a source of water under pressure for communicating the water source to a hose-guided traveling sprinkler during the operative run thereof and for interrupting the communication of the water source thereto in response to the traveling sprinkler reaching the end of its operative run, the device includes a housing having a waterflow passage extending therethrough with an annular valve seat adjacent the outlet end thereof, and an actuating structure including an interior rod portion extending through an over-sized opening in offset relation with the axis of a spherical valve member, a spherical intermediate mounting portion sealingly engaged and mounted within the housing by a swivel socket assembly and an exterior portion adapted to be actuated in response to the traveling sprinkler reaching the end of its operative run, and an improved insert structure molded of resilient material such as plastic or rubber mounted within the passage in a position to engage the free end of the rod portion of the actuating structure when the latter is disposed in its open position to retain the ball valve member against water biased movement with the valve seat operable when the exterior portion of the actuating structure is actuated as aforesaid to yieldingly releasr the interior rod portion of the actuating structure to thereby permit the valve member to move into closed relation with the valve seat.

3,785,564

APPARATUS FOR TREATING ROWS OF PLANTS WITH OVERLAPPING BRANCHES

Archie Baldocchi, Edificio Rivas Cierra A Calle Arce 707, San Salvador, El Salvador

Filed July 7, 1972, Ser. No. 269,532
Int. Cl. B05b 3/18; A01g 25/00; A01c 23/00
U.S. Cl. 239—172 7 Claims



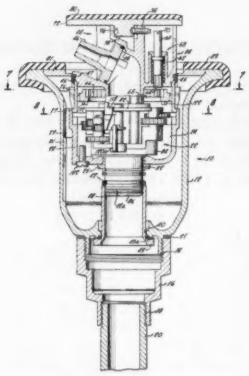
Traction equipment of limited height capable of traveling between rows of plants and under the lowermost overlapping branches of the plants in the adjacent rows carries or pulls a dispensing device also of limited height to spray under pressure a suitable substance for the treatment of the plants under sufficient pressure to reach the trunk and foliage of said plants, guiding means are provided so as to feel the opposite plants or the sides of the furrow or ditch therebetween so as to cause the turning of the wheels of the traction apparatus so as to follow the direction of the furrow or the ditch. The device has a suitable pump and conduits which are valve controlled, and has suitable servo motors for operating the driving mechanism at a desired speed and also for operating the pump and controlling the valve for the spraying liquid. Remote control devices such as selected tone transmitter from control tone generators and suitable actuating tone receiver on the tractor and the apparatus, may be provided to permit the operation of the device from a remote location such as a tower overlooking the entire field on which the rows of plants are located.

3,785,565

ROTARY SPRINKLER HEAD

Leonard T. Perry, Midway City; Donald T. Costner, Downey, and Edward F. Noggle, Tustin, all of Calif., assignors to Wet Manufacturing Co., Orange, Calif.

Filed Jan. 8, 1973, Ser. No. 321,747
Int. Cl. B05b 3/16
U.S. Cl. 239—206 19 Claims



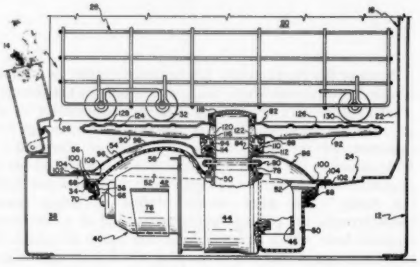
A pop-up, gear driven, rotary sprinkler head in which the arc of spray coverage may be precisely adjusted while the sprinkler head is inoperative by counting clicks of a detent and in which the drive reversal means for the nozzle is a cam actuated deflector which directs water from a single orifice in either of two directions to reversably drive the gear train.

3,785,566

SEALING SYSTEM FOR WASHING MACHINE

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1973, Ser. No. 320,616
Int. Cl. B05b 3/06
U.S. Cl. 239—259 8 Claims



An automatic washing machine of the type having a pump-motor arrangement delivering pressurized washing liquid to a spray arm. The pump outlet is provided with a seal member which expands into sealing engagement with the spray arm in

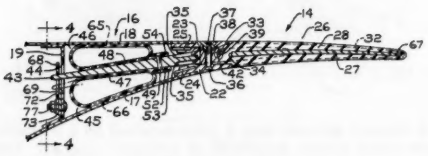
response to the delivery of pressurized washing liquid therethrough. The pump-motor arrangement is removable from the bottom of the washing tub by moving it outwardly through the tub. The spray arm is mounted in axial alignment with the pump outlet by a support spanning the pump-motor arrangement.

3,785,567

MOVABLE WALL FOR ENGINE NOZZLE

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,271
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.39 **15 Claims**



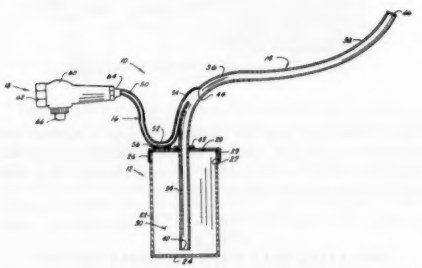
A movable wall having a plurality of side-by-side wall members connected by a web of resilient rubberlike material and swingable about different axes tangent to a ring around an engine nozzle area. A first inflatable tube is in engagement with one side of the wall members and a second inflatable tube is in engagement with the other side of the wall members for selectively swinging the wall members toward or away from the nozzle area as the fluid pressure is increased in one inflatable tube and decreased in the other.

3,785,568

PARTICULATE MATERIAL DISTRIBUTING MEANS

Eddie M. Pfingsten, and Jerry L. Travis, both of 615 Russell St., Mulvane, Kans.

Filed July 5, 1972, Ser. No. 269,199
Int. Cl. A62c *5/02*
U.S. Cl. 239—310 **8 Claims**



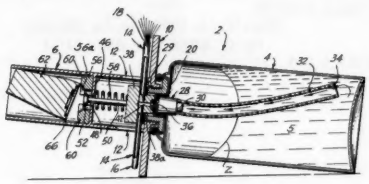
A particulate material distributing device removes particulated material from a container and disperses it in a fluid stream in a vertical direction away from the container. The device has a container for a quantity of particulate material, a particle conduit mounted with the container having an inlet in the container and an outlet outside the container, the outlet thereof being oppositely directed relative to the inlet. An operating fluid conduit is connected to the particle conduit and has a control valve connected with the operating fluid conduit to regulate the introduction of the operating fluid.

3,785,569

AEROSOL GRENADE

Ralph Helmrich, High Bridge, N.J., assignor to Diamond Aerosol Corporation, Glen Gardner, N.J.

Filed Aug. 10, 1972, Ser. No. 279,459
Int. Cl. F42b *27/06*
U.S. Cl. 239—337 **32 Claims**



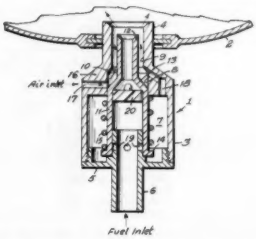
An aerosol grenade which spins at a high rate about more than one axis to discharge its fluid contents over a wide area even under windless conditions. The grenade includes a pressurized container, a plurality of discharge nozzles oriented so as to cause the grenade to spin about one of its axes upon discharge of the fluid contents. A fuse mechanism is provided which opens the closure for the pressurized container when a trigger block in the fuse mechanism is subjected to a lateral force upon impact of the grenade. The plane of the discharge nozzles is spaced along the longitudinal axis of the grenade from the center of gravity of the grenade. A spinning ring the plane of which is spaced from the center of the longitudinal axis of the grenade increases the erratic movement of the grenade upon discharge facilitating distribution of the grenade's contents. The grenade is especially useful as a means of distributing tear gas, the rapid and erratic movement preventing throw back by target personnel. A preferred lachrymatory composition employed comprises orthochlorobenzylmalononitrile dissolved in N,N-dimethyl formamide or N,N-dimethyl acetamide.

3,785,570

DUAL ORIFICE FUEL NOZZLE WITH AIR-ASSISTED PRIMARY AT LOW FLOW RATES

Stanley Krieger, Rivera Beach, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 30, 1972, Ser. No. 284,847
Int. Cl. B05b *7/00*
U.S. Cl. 239—401 **7 Claims**



A dual orifice liquid fuel nozzle for a combustion chamber including a pressure responsive valve to help produce smaller fuel droplets at lower fuel flow for more consistent combustion. The device comprises a valve housing having a coaxial fuel inlet, an inlet for a gas such as air, a spring-loaded movable valve telescopically mounted on the fuel inlet and a secondary passage. At low pressure fuel flow the movable valve permits the gas to contact the fuel so as to atomize it.

When fuel pressure increases, the valve shuts off the gas, while permitting additional liquid fuel to enter the secondary passage.

3,785,571

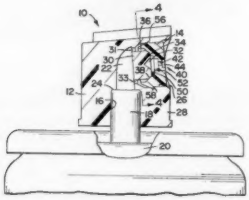
MECHANICAL BREAKUP AEROSOL SPRAYER BUTTON

Kevin J. Hoening, Cary, Ill., assignor to Seaquist Valve Company, Cary, Ill.

Filed May 5, 1972, Ser. No. 250,604

Int. Cl. B05b *1/34*; B65d *83/14*

U.S. Cl. 239—492 **15 Claims**



A mechanical breakup aerosol valve button or actuator with an annular feed chamber which feeds passageways leading into a central swirl chamber immediately ahead of the forward portion of a cylindrical terminal orifice feed post which includes a centrally disposed cavity formed in the face thereof and immediately behind a recessed terminal orifice contained within a terminal orifice which cooperate to produce a homogeneous spray pattern.

3,785,572

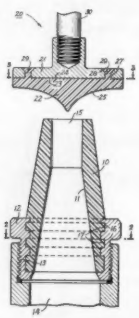
PLASTIC LINED SPRAY NOZZLE

Orlan M. Arnold, and Alfred W. Hardy, both of Norwalk, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed May 25, 1972, Ser. No. 256,793

Int. Cl. B05b *1/26*

U.S. Cl. 239—518 **9 Claims**



A spray nozzle adapted to eject a radial spray around its entire periphery comprising a plastic nozzle element having an axial bore adapted to produce an axial jet and secured at its base in a metal supporting ring and a transverse deflector plate disposed in the path of the jet to deflect the same radially outwardly to form a 360° spray pattern. The deflector plate is formed by a plastic disc or liner shaped to the deflector surface and carried by a metal support element.

3,785,573

MATERIAL DISCHARGE AND SPREADING APPARATUS FOR FLUENT MATERIAL

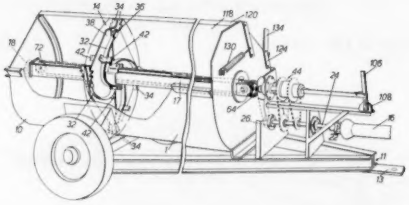
Alexander Crawford, Warwick, England, assignor to Massey-Ferguson-Perkins Limited, London, England

Filed July 24, 1972, Ser. No. 274,788

Claims priority, application Great Britain, July 23, 1971, 34,669/71

Int. Cl. A01c *3/06*

U.S. Cl. 239—658 **11 Claims**



A manure spreader with a rotor mounted on a rotatable shaft which extends lengthwise of a manure container. The rotor is moved lengthwise of the shaft during rotation by a chain extending in two runs round two rotatable pocket wheels carried by the shaft. One of the pocket wheels is driven to move the rotor along the shaft.

3,785,574

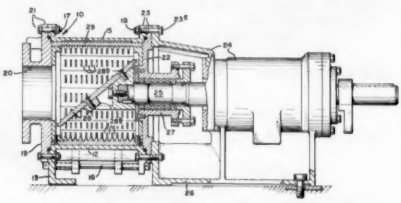
SWASH-TYPE IMPELLER PUMPS

John B. Rosenquest, Jr., New Canaan, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed May 8, 1972, Ser. No. 250,929

Int. Cl. B02c *13/10*

U.S. Cl. 241—15 **16 Claims**



In a swash-type impeller shredder pump, a method and means for varying the spacing of the stationary cutter bars cooperative with the serrated swash-type impeller in a combined pumping and shredding operation.

3,785,575

VIBRATING MILL WITH INTRODUCTION OF REFRIGERANTS INTO THE SOLID MATERIAL BEING GROUND IN THE GRINDING CHAMBER

Jurgen Langmaack, Niederkassel, and Helmut Haas, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Nov. 18, 1971, Ser. No. 199,933

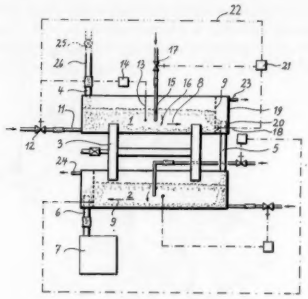
Claims priority, application Germany, Nov. 21, 1970, P 20 57 428.1

Int. Cl. B02c *17/14*

U.S. Cl. 241—33 **9 Claims**

A vibrating mill for grinding solid materials is provided with a grinding chamber with at least one or a plurality of spaced feed pipes for refrigerants which terminate within the body of

the solid material being ground within the grinding chamber and the amount of the refrigerants introduced is controlled by

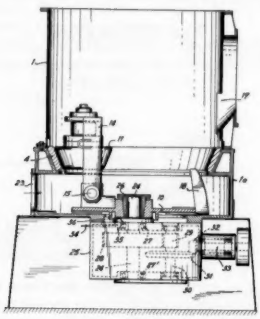


temperature probe or probes which control valves in said feed pipes.

3,785,576
GRINDING MILL

Jean Desbordes, Paris, France, assignor to Societe anonyme dite: Stein Industrie, Paris, France

Filed Dec. 8, 1969, Ser. No. 883,078
Claims priority, application France, Dec. 9, 1968, 68177181
Int. Cl. B02c 4/12
U.S. Cl. 241—57 **3 Claims**



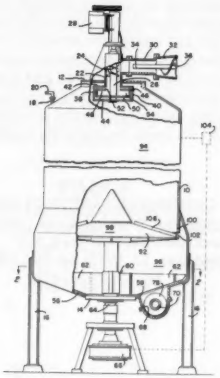
The grinding mill includes a chamber having a rolling track and a base beneath the track. A plate within the base carries a roller engaging the track, and reduction gearing secured to the base rotate the plate. The output shaft of the gear is connected directly to the plate. An air duct carries compressed air to a passage defined by an annular shoulder depending from the plate. An opening in the base admits air required for grinding.

3,785,577
APPARATUS FOR THE GASEOUS REACTION OF MATERIAL

Lawrence A. Carlsmith, Amherst, N.H.; William L. Mallory, Beaconsfield, Quebec, Canada, and Joseph K. Perkins, Nashua, N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed July 18, 1972, Ser. No. 272,960
Int. Cl. B02b 1/00
U.S. Cl. 241—57 **20 Claims**

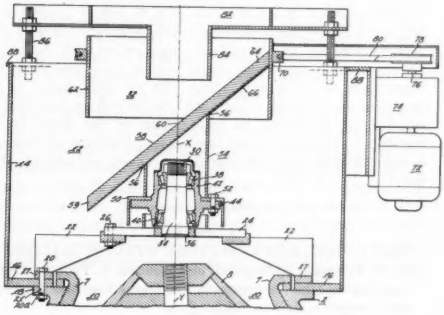
Apparatus comprising a vessel, means for compacting material and supplying the compacted material to the vessel, means for breaking-up the compacted material and spreading the broken-up material in the vessel, means for supplying gas to the vessel, and discharge means for discharging material in compacted condition, such discharge means including a discharge opening and flap means causing material to be discharged therethrough in said compacted condition. A rotatably driven platform divides the vessel into communicating retention and discharge chambers and controls the passage of material from the retention chamber to the discharge chamber; and the retention chamber is connected to the material and gas supplying means and contains the material breaking-up and spreading means, while the discharge chamber is provided with a large, offset, discharge opening and contains a scraper movable thereover.



3,785,578
FEED DISTRIBUTOR FOR CRUSHER

Robert H. Kemnitz, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 16, 1972, Ser. No. 307,051
Int. Cl. B02c 23/02
U.S. Cl. 241—202 **6 Claims**



A feed distributor is shown mounted above a frame and annular crushing chamber of a gyratory crusher. The distributor has a cylindrical feed wall with an annular flange at its lower end adapted to be removably attached to the crusher frame, and a plurality of arms projecting radially inward from the feed wall to support a platform centrally located within the feed wall. A feed chute is supported on the platform for rotation about a vertical axis centrally located with regard to the feed wall and annular crushing chamber. The chute projects radially outward and downward from a point where the chute

intersects the vertical axis about which the chute rotates. A feed hopper is supported by the feed wall over the chute and the hopper has a discharge spout coaxial with the vertical axis about which the chute rotates. A driving motor is supported by the feed wall and is drivingly connected to the chute to rotate the chute and turn the lower and discharge end of the chute in a horizontal annular path above the annular crushing chamber to discharge feed falling through the discharge spout of the hopper downwardly and outwardly from the lower end of the chute into and around the annular crushing chamber of the crusher. The entire feed distributor, including the cylindrical feed wall, may be pre-assembled and mounted on top of a crusher as a single unitary assembly, and removed therefrom as a single unitary assembly, thereby providing easy assembly, disassembly and access to the top of the crusher.

3,785,579

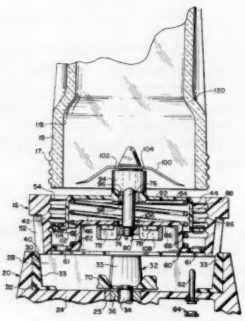
LIQUIDIZER SAFETY CLUTCH

Harry M. Voglesonger, Riverton, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,385

Int. Cl. B02c *18/12*

U.S. Cl. 241—282.1 **17 Claims**



Safety release clutch for two part liquidizer container in which the cutter clutch member that is journalled in the lower part is resiliently retracted from engagement with the motor clutch member when the upper part is separated from the lower part for cleansing either one or both parts. In its retracted position the cutters may be locked against relative rotation or permitted to rotate free of the drive clutch member, but in either event there is no projection of elements below the lower part whether the two parts are assembled or not.

3,785,580

WIRE GUIDES FOR ARMATURE WINDING MACHINES

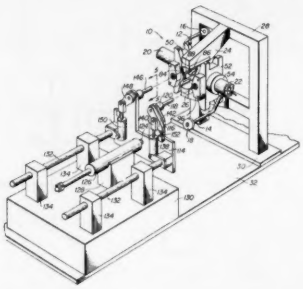
John B. Kennedy, Springfield, and Kenneth L. Pepper, Kettering, both of Ohio, assignors to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Dec. 20, 1971, Ser. No. 209,644

Int. Cl. H02k *15/09*

U.S. Cl. 242—7.05 B **8 Claims**

The opposed chucks of a double flier armature winding machine are each provided with two disc-shaped rotatable wire guide members. Each of the wire guide members has four equally circumferentially spaced wire guiding surface portions which are successively positioned in the path of the wire used in winding coils for forming the coil end turns toward the armature shaft. The degree of forming depends upon the contour of the particular surface portion positioned in the path of the wire during the winding of a given coil. Further disclosed is a drive assembly for rotating the wire guide members. The drive assembly is normally positioned remote from the winding area and advanced into the winding area for rotating the wire guide members when desired during the intervals between the winding of coils.



3,785,581

WINDING STOP MOTION FOR TEXTILE WINDING MACHINES

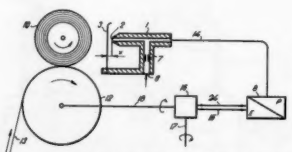
Jaroslav Sedlarik, Liberec, Czechoslovakia, assignor to ELITEX, Zavody Textilnino Strojirenstvi Generalni Reditelstvi, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 12,748, Feb. 19, 1970, abandoned. This application July 26, 1971, Ser. No. 164,800

Claims priority, application Czechoslovakia, Feb. 28, 1969, 1444-69

Int. Cl. B65h *63/04*

U.S. Cl. 242—39 **10 Claims**



Winding stop motion for textile machines having a fluid pressure control relay mounted in the area of the yarn winding being formed. The relay is connected to a source of pressure fluid, usually air, and to a pressure responsive means. Such means is actuated, upon a predetermined approach of the surface of a winding being formed upon a bobbin, to produce a signal which stops the winding operation. The relay detects the approach of the winding surface thereto by means of a discharge nozzle which may coact directly with the surface of the winding or may coact with a feeler which itself engages the yarn winding. In a further embodiment, the discharge nozzle is provided with a valve which is actuated when the diameter of the bobbin being wound reaches a predetermined desired value.

3,785,582

APPARATUS FOR WEIGHING YARN ON A YARN WINDING MACHINE

Andre Girard, Saint-Hyacinthe, Quebec, Canada, assignor to Aronelle Textiles Limited, Mont-St-Hilaire, Quebec, Canada

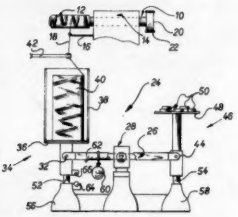
Filed Sept. 9, 1971, Ser. No. 178,882

Int. Cl. R65h *63/08*

U.S. Cl. 242—39 **4 Claims**

The disclosure herein describes an improved apparatus and method for weighing the yarn wound on the rotatable shaft of

a yarn winding machine; the apparatus consists of a balance beam which has at one end thereof a first deck for receiving thereon at least one yarn bobbin from which skeins or balls of yarn are to be made and which has at the opposite end thereof a second deck for receiving thereon a plurality of individual weights, each individual weight corresponding to the predetermined weight assigned to a skein or ball of yarn, or to a fraction thereof. Positioned to be responsive to the balance beam movement, an electrical switch, when closed, causes the rotation of the machine shaft on which yarn is bundled in the form of a skein or a ball; when the weight of the yarn transferred from the bobbin onto the shaft equals that of the one or more weights removed from the second deck prior to a winding operation, the balance beam returns to equilibrium thereby opening the switch and stopping the winding operation.



3,785,583

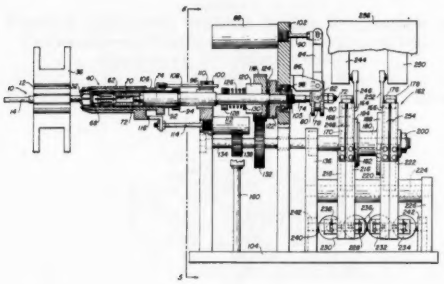
SHAFT ROTATING MECHANISM

John M. Biddison, Dayton, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio

Division of Ser. No. 888,406, Dec. 29, 1969, Pat. No. 3,673,878. This application Sept. 24, 1971, Ser. No. 183,436

Int. Cl. H02k *15/09*

U.S. Cl. 242—7.05 B **10 Claims**



The spindle to which an armature is chucked is driven by a drive shaft stopped at plural different predetermined positions by the engagement of stop dogs with cams mounted thereon. In one embodiment there are four cams mounted on the drive shaft for stopping the drive shaft at any one of four positions for winding armatures having two coils per slot. The angular positions of the four cams are pre-adjustable on the drive shaft whereby the predetermined stopped positions thereof can be changed to accommodate different types of armatures and different patterns of wind. Two of the cams are adjustably connected by a sleeve having gear teeth meshing with gear teeth relatively fixed to one of the cams and an eccentric connection to the other of the cams. These cams are rotatable relative to other cams and locked in adjusted positions by pins projecting through apertures therein. The apertures are appropriately marked in terms of the types of armatures and winding patterns.

Two other embodiments of relatively adjustable cams are illustrated. In one embodiment, cams have radially directed slots, portions of which are aligned to obtain the desired angular relation between them. In a further embodiment cams are connected by eccentric pin means used to obtain the desired relative angular positions.

In still another embodiment, only two relatively adjustable cams are used, but with four stop dogs, two of which are angularly adjustable.

The operation of the armature rotating mechanism is described for the winding of both one and two coil per slot armatures. In all embodiments only two of the dogs are used for stopping the armature at predetermined positions for winding armatures having only one coil per slot.

3,785,584

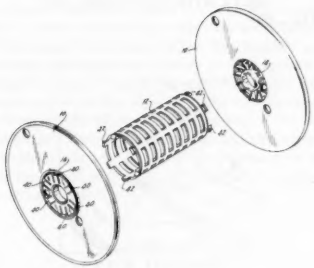
SNAP LOCK ASSEMBLY

John R. Crellin, Jr., Spencertown, N.Y., assignor to Albany International Corp., Albany, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,621

Int. Cl. B65h *75/14*

U.S. Cl. 242—118.6 **7 Claims**



A first member has spaced openings formed therein, said openings each being defined by a rigid portion on one side and the end of a resilient tongue on the other side. Each rigid portion includes a beveled leading edge surface and an inner surface that terminates forming a gripping shoulder. A second member has yieldable projections formed and arranged for engagement with an insertion into the openings of the first member. Each projection has an enlarged end portion defined by an inclined surface formed on a side of the projection adjacent a rigid portion of the first member. The inclined surface terminates abruptly to form a lip for engaging the gripping shoulder of the first member. After insertion of the projections into the openings, the lips engage the gripping shoulders and the resilient tongues engage the projections on a side opposite the inclined surface to prevent disengagement of the lips and gripping shoulders and removal of the projections.

3,785,585

BOBBIN SOCKET

Isao Sato, 2-17, 2-chome, Tomigaoka, Nara, Japan

Filed Nov. 2, 1971, Ser. No. 194,894

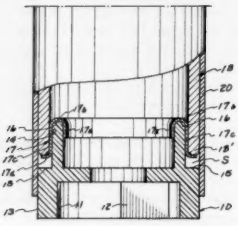
Claims priority, application Japan, Dec. 4, 1970, 45/121345 [U]; Dec. 18, 1970, 45/127974 [U]

Int. Cl. B65h *75/10*

U.S. Cl. 242—118.31 **1 Claim**

In a bobbin socket having a metal ring mounted between a bobbin body and a socket body, said ring has such a substantially S shape in vertical section that it can be integrally mounted to the upper and outer periphery of the socket body

so as to protect the flange surface of the socket body from plastic deformations and damages which might otherwise be



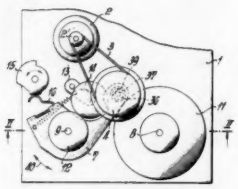
caused by the forced pressure of the lowest periphery of the bobbin body.

3,785,586

FRICTION WHEEL DRIVE ESPECIALLY FOR CASSETTE MAGNETIC TAPE RECORDERS

Heinz Engert, and Heinz-Dieter Engert, both of Dyroffstr. 4C, Munich Untermenzing, Germany

Filed Jan. 28, 1972, Ser. No. 221,692
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—201 **7 Claims**



A flywheel is driven from a motor output shaft by resilient power transmission means, and has a smaller diameter sleeve or hub rotatable therewith. A shaft secured to the flywheel extends concentrically through the hub or sleeve, and has a diameter substantially less than the internal diameter of the hub. An additional sleeve is telescoped over this shaft, and has a cutaway portion therein at a distance from the flywheel equal to the axial length of the first-mentioned hub, this cutaway exposing the shaft. The flywheel is rotatably mounted on a setting lever which is operable to set positions by means of a manually displaceable cam wheel acting through a spring. In one position of the parts, the hub engages a counterwheel driving a further friction wheel associated with a shaft mounting a rewind pulley and, in another position of the lever, a friction wheel secured to a shaft associated with the forward drive reel extends into the cutaway portion to directly engage the shaft secured to the flywheel, for low speed forward movement of the tape.

3,785,587

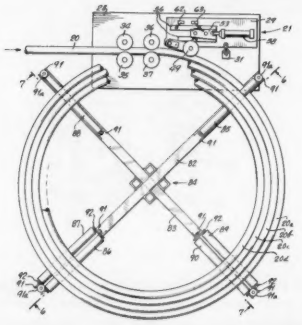
COIL OF CONTINUOUS ELONGATED MATERIAL

Herbert J. Meyfarth, Cleveland, Ohio, and John J. Crosby, Cambria Heights, N.Y., assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 823,764, May 12, 1969. This application June 24, 1971, Ser. No. 156,457
Int. Cl. B65h *55/00*; **B21c** *47/00*
U.S. Cl. 242—159 **5 Claims**

A coil made of a continuous piece of elongated material such as tubing, prebent into pancake-like spirals called radial layers, each radial layer made up of several concentric and coplanar convolutions, with several radial layers stacked axially, and method and apparatus for making such coils.

The material is bent prior to coiling at predetermined bending radii which are different for different convolutions within a radial layer. One or more of the convolutions within each radial layer may be bent at constant bending radius; the rest may



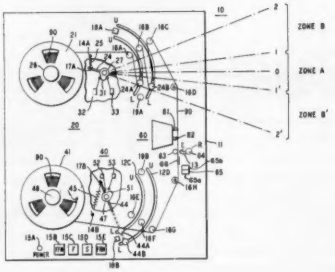
be bent at gradually changing radii. The bending radius is controlled by an electric and hydraulic network employing both timed and feedback controls. The coil may be built either upwardly, with the most recently made radial layer always at the bottom of the coil, or it can be built downwardly, with the most recently made radial layer always on the top of the coil.

3,785,588

TAPE TRANSPORT REEL SERVO SYSTEM

Eugene Charles Schramm, Boonton, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1971, Ser. No. 201,649
Int. Cl. B65h *59/38*; **G03b** *1/04*; **G11b** *1/52*
U.S. Cl. 242—188 **2 Claims**



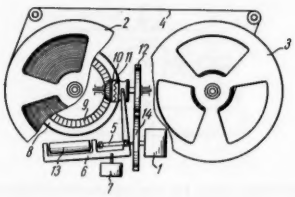
In a tape transport system including first and second rotatable tape storage reels, the nonlinear servo mechanism associated with the first reel is enabled during the fast wind mode to control the tape supply between the reels within a predetermined range, while the motor associated with the second reel is continuously energized in the forward direction to independently effect tape transfer from the first reel to the second reel, the nonlinear servo mechanism associated with the second reel being disabled during this mode. Tension means associated with the first reel maintains substantially constant tape tension independently of tape supply. It is a feature of this invention that the first and second reel motors' normal torque-speed characteristics are respectively modified to counteract the tape's dynamic tension and to provide the predetermined maximum linear tape speed.

3,785,589

MECHANISM FOR TRANSPORTATION OF AN INFORMATION CARRIER AT RESPECTIVELY DIFFERENT SPEEDS

Vladimir Valerianovich Benderovsky, ulitsa Dymerskaya, 37, kv. 1; Alexandr Ivanovich Schepotiev, Brest-Litovsky prospekt, 112, kv. 39; Igor Alexandrovich Yastrebov, 52 Delegatsky pereulik, 10, kv. 1, and Viktoria Mikhailovna Kotenko, Brest-Litovsky prospekt, 19, kv. 27, all of Kiev, U.S.S.R.

Filed July 29, 1971, Ser. No. 167,122
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 4 Claims



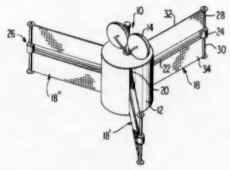
A mechanism for transportation of an information carrier from a supply reel onto a take-up reel by means of a driving motor adapted to be drivingly connected with the take-up reel through at least two independent transmissions having different transmission ratios. One transmission includes a pair of bevel gears and the other includes a worm and worm gear, and actuation of one transmission with con-current deactivation of the other is effected by a displaceable bracket member.

3,785,590

SPACECRAFT BODY WITH ROLLER MECHANISM FOR DEPLOYABLE-RETRACTABLE THIN FILM SOLAR ARRAY

Donald L. Wentworth, Braddock Heights, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 21, 1970, Ser. No. 100,016
Int. Cl. H01l *15/02*
U.S. Cl. 244—155 7 Claims



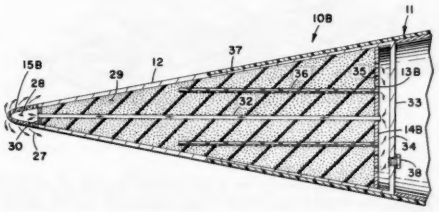
Rotatable, roller booms are carried by an extendable member which moves outward from a spacecraft body with one end of each flexible solar cell panel rigidly coupled to the spacecraft body and the other end rigidly coupled to the periphery of a rotatable roller boom. During deployment, the solar cell panels which are rolled up on the roller booms unwind. A spring-operated negator motor coupled to the rotating boom at one end and to the fixed housing at the end of the deployment member, winds up during deployment of the solar cell panel to facilitate retracting of the thin film solar array by rewinding the flexible solar panels about the periphery of the roller booms.

3,785,591

COOLING SYSTEM, EMPLOYING HEAT-EXPANDABLE MEANS, FOR AN AERODYNAMICALLY HEATED VEHICLE

Charles J. Stalmach, Jr., Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed May 25, 1971, Ser. No. 146,703
Int. Cl. B64c *1/40*; B64g *1/00*
U.S. Cl. 244—1 SC 13 Claims



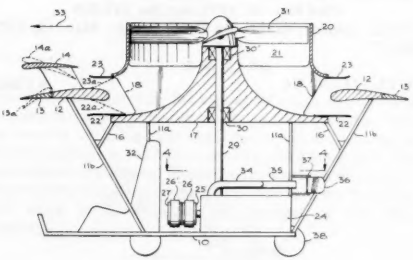
A cooling system for an aerodynamically heated vehicle includes a chamber disposed within the vehicle and containing a coolant and a heat-expandable means for increasing the pressure and reducing the volume within the chamber upon being heated during aerodynamic heating of the vehicle. Coolant under pressure exerted within the chamber by the expandable means is ejected from the chamber and conducted to the external surface of the heated, external skin of the vehicle. In one embodiment, a plurality of coolant chambers are disposed within a vehicle, each being positioned adjacent a respective portion of the outer skin of the vehicle for providing independent protection of each portion.

3,785,592

VTOL AIRCRAFT

Kermit D. Kerruish, 3546 Golddust St., Phoenix, Ariz.

Filed Oct. 4, 1971, Ser. No. 186,347
Int. Cl. B64c *27/20*
U.S. Cl. 244—12 C 2 Claims

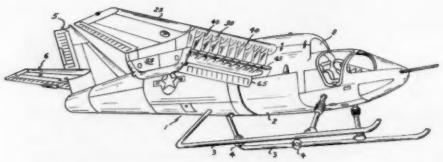


The present invention provides a vertical takeoff and landing aircraft vehicle in which a ducted downward airflow is redirected radially outward over an annular wing. The transition from the vertical to the horizontal flight mode is made by selectively closing off portions of the airflow exiting from the duct toward the wing. This is accomplished by means of flaps which are gradually closed on the forward side of the aircraft resulting in a net thrust forward due to the predominantly rearward flowing air.

3,785,593
AIRCRAFT PROPULSION SYSTEM

Hans J. P. Von Ohain; Roscoe H. Mills, and Charles A. Scolatti, all of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 10, 1971, Ser. No. 179,521
Int. Cl. B64c *29/04*
U.S. Cl. 244—12 R **6 Claims**

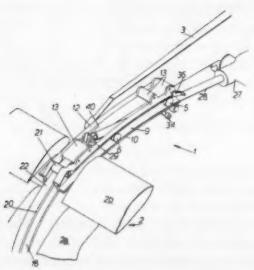


The invention relates to a propulsion system particularly adapted to VTOL and STOL type of aircraft and in which a main wing has an auxiliary wing arranged either above or below in spaced biplane relation with the space between the wings, in combination with suitable end plates, forming a rectangular propulsion duct extending spanwise on each side of a central fuselage. A gas turbine driving an air compressor has the compressed air therefrom delivered through a conduit formed in one of the wings from whence it passes to a series of injection nozzles which inject air into the duct inlet to entrain and mix with atmospheric air drawn into the inlet and which expands in a diffuser portion of the duct to generate an augmented propulsive thrust. The nozzles are housed in streamlined struts or housings extending vertically between the wings and transverse to the duct. One of the wings is provided with an adjustable trailing edge flap for varying the discharge area of the propulsive duct diffuser and the other wing is provided with a flap provided with nozzles at its leading edge and adapted to discharge over the suction surface of the flap and when the flap is depressed downward to cause additional downward deflection of the propulsive duct discharge by "Coanda" effect.

3,785,594
AIRCRAFT FLAP SYSTEM

Norman Lee, St. Annes-on-Sea, England, assignor to British Aircraft Corporation Limited, London, England

Filed Mar. 10, 1972, Ser. No. 233,505
Claims priority, application Great Britain, Mar. 12, 1971, 8,236/71
Int. Cl. B64c *3/54*
U.S. Cl. 244—42 DA **6 Claims**

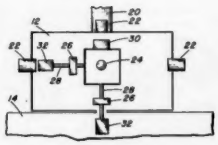


In an aircraft, a lift-increasing flap system includes a flap carried on units which each comprise two guide members which are telescopic with one another, there being provided means such that on initial extension of the flap, the guides are coupled together and extend as one, but on further extension the guides are uncoupled such that one guide can extend from the other.

3,785,595
SYSTEM FOR SENSING AND COMPENSATING FOR THE DISTURBANCE FORCES ON A SPACECRAFT

Robert E. Fischell, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1972, Ser. No. 305,749
Int. Cl. B64g *1/10*
U.S. Cl. 244 -1 SA **6 Claims**

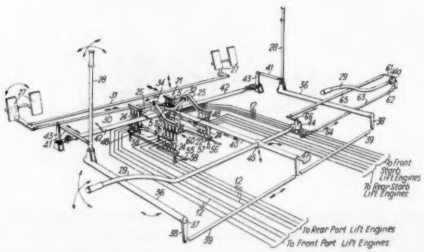


An improved system for sensing the disturbance forces on a spacecraft. An unsupported mass is shielded by the spacecraft from external non-gravitational forces, allowing the mass to travel in a purely gravitational orbit. A sensor system responds to motion of the spacecraft relative to the unsupported mass and activates thrusters which force the spacecraft to follow the unsupported mass without touching it. Movable masses or chargeable magnets on three orthogonal axes are mounted in the spacecraft to compensate for the attraction between the mass and other components located within the spacecraft.

3,785,596
IMPROVEMENTS IN OR RELATING TO AIRCRAFT CONTROLS

Ian Chinchester-Miles, Harpenden, England, assignor to Hawker Siddeley Aviation Limited, Surrey, England

Filed May 26, 1972, Ser. No. 257,077
Claims priority, application Great Britain, May 27, 1971, 17652/71
Int. Cl. B64c *19/00*
U.S. Cl. 244—83 R **13 Claims**



A flying control system in a VTOL or V/STOL aircraft comprises a mechanical analoque 'model' of the lift and propulsion plant of the aircraft. Vertically-disposed electromechanical transducers represent, respectively, the lift engines of the aircraft, each transducer being vertically extendible and also tiltable in the fore-and-aft direction and delivering two electrical output signals, indicating vertical extension and tilt respectively, to control respectively the throttle opening and thrust deflection of the respective engine. The transducers are actuated by a mechanical assembly that receives pilots' command and autostabiliser inputs and is caused to "yaw", "roll" and

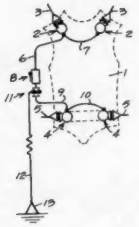
"pitch" by movement of the rudder pedals and control column, and to translate vertically and horizontally fore-and-aft by movements of a lift control lever.

3,785,597

PARACHUTE HARNESS RELEASE

John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif.

Filed Mar. 6, 1972, Ser. No. 231,994
Int. Cl. B64d *17/30, 17/38*
U.S. Cl. 244—151 A **8 Claims**



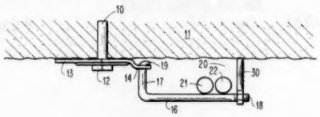
A manipulable device for piercing a cartridge releases gas under pressure into conduits to release all the buckles of the harness. The buckles are also releasable manually. Between the gas connection to the buckles on the lap belt and the manipulable device or cartridge casing is a disconnect anchored to the plane which, when the pilot is ejected from the plane, disconnects the gas connection of the lap belt buckles from the gas supply or cartridge casing, so that when the crewman lands, he can manipulate the cartridge piercing device to be quickly released from the parachute harness, without releasing the lap belt buckles which latter support the survival kit in convenient position on the crew man.

3,785,598

MEANS FOR SUSPENDING CABLES FROM MINE ROOF

Peter M. Gillstrap, 325 Walker St., Hartford, Ky.

Filed Feb. 22, 1972, Ser. No. 228,218
Int. Cl. F16l *3/00*
U.S. Cl. 248—58 **2 Claims**



A hanger for supporting cables or the like adjacent the roof of a mine is shaped for ready attachment to a mine roof plate held by a safety bolt embedded in the roof material. The hanger is provided with an adjustable keeper serving to hold the supported cable on the hanger.

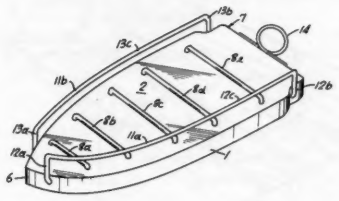
3,785,599

IRON PAD

Ramon Ramirez, Miami, Fla., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,383
Int. Cl. D06f *79/02*
U.S. Cl. 248—117.2 **6 Claims**

An iron pad comprises a base member having substantially planar upper and lower surfaces. Iron supporting components such as nickel plated steel or Teflon coated steel mounted on the upper surface of the base member supports an iron. Guard rails such as nickel plated steel or Teflon coated steel affixed to the base member prevents an iron supported on the supporting components from falling off the supporting components. A loop affixed to and extending from the base member permits hanging of the iron pad when not in use.

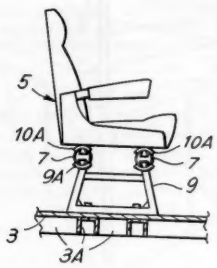


3,785,600

ADJUSTABLE MOUNTING ASSEMBLIES FOR GROUPS OF SEATS IN AIRCRAFT OR OTHER VEHICLES

Felix Padovano, Rome, Italy, assignor to 1P Industria Chimica per l'Arredamento S.p.A., Rome, Italy

Filed Jan. 25, 1972, Ser. No. 220,606
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.1 **5 Claims**



An adjustable mounting for a group of chairs or other articles comprises a pair of beams supported from a floor or other load bearing structure. The chair mountings are secured in selected positions in channels extending along the beams. The beam support are secured in selected positions in other channels extending along the beams, the positions of the floor supports being independent of the position of the floor mountings.

3,785,601

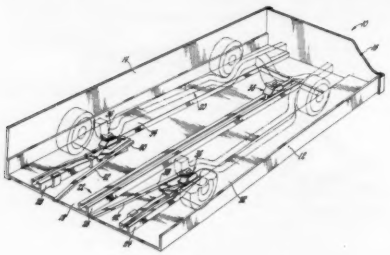
SHOCK ABSORBING SECUREMENT DEVICE

Elwyn L. Kitchen, Jr., Troy, and Gregory H. Kirk, Farmington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1972, Ser. No. 240,356
Int. Cl. B60p *3/06, 7/08;* **B60d** *45/00*
U.S. Cl. 248—119 R **2 Claims**

A securement device for maintaining a vehicle on a transporter characterized in that the securement device is formed in two parts which are bonded together by an elastomeric material. One part of the securement device is adapted to be

mounted to the underside of the vehicle, while the other part is adapted to be connected to the transporter and the



elastomeric material serves to absorb shock loads caused by movement of the vehicle due to inertial forces.

3,785,602

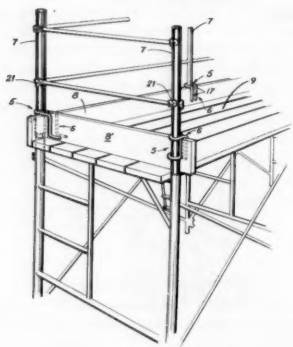
TOEBOARD CLAMP FOR STEEL SCAFFOLDING

Charles T. Juculano, Oshkosh, Wis., assignor to Symons Corporation, Des Plaines, Ill.

Filed Mar. 2, 1972, Ser. No. 231,266

Int. Cl. F16m *13/02*

U.S. Cl. 248—214 **6 Claims**



A clamp comprises a U-shaped rod with a semicircular bight portion that embraces a rear side of a post. Its legs project forwardly from the bight portion, to overlie the top edge of an edgewise upright board, thence downwardly to confine the board against the post. The bight portion can be welded to a length of tubing that encircles the post and through which a set screw extends. Or a second member having a semicircular post embracing portion can be rigidly connected to said bight portion by an elongated element that holds the semicircular portions coaxial, spaced vertically and opening forwardly.

3,785,603

ADJUSTABLE MOUNT

Ernst Apel, Gebrunn-Wurzburg, Germany, assignor to Ernst Apel Fabrik fur Feinnechanik, Gerbrunn-Wurzberg, Germany

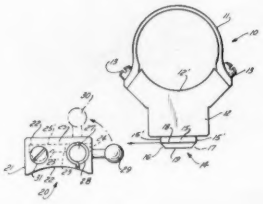
Filed Oct. 18, 1971, Ser. No. 189,852

Claims priority, application Germany, Oct. 20, 1970, P 70 38 599.8

Int. Cl. F41g *1/38*

U.S. Cl. 248—225 **4 Claims**

An adjustable mount for releasably mounting a first component on a second component, particularly for telescopic sight assemblies, includes a first element which is adapted to be mounted on the second component. The first element has a surface which is provided with an undercut securing groove having at least one open end. A second element is adapted to be fixed to the first component and has a securing stud which is shaped to mate with the securing groove to thereby provide a slidable fit therethrough. The securing stud is receivable in the securing groove through the open end thereof. A substantially circular member has a cutout portion which defines a flat surface, the circular member being mounted on the first element for rotation in the region of the open end, the circular



member being rotatable between a first position in which the surface is so positioned in relation to the securing groove that the securing stud can pass into or out of the groove and a second position in which the surface is so oriented that the securing stud can only enter but not move out of the groove. A bolt having an eccentric portion is rotatable on the first element and moves relative to the securing stud in response to rotation of the bolt, the bolt being operatively positioned in relation to the stud to force the stud against surfaces of both the groove and the circular member to effectively lock the second element to the first element.

3,785,604

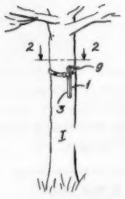
SUPPORT BRACKET FOR LANTERNS AND THE LIKE

Edward James Steck, 9017 Laurel Crest Dr., Crestwood, Mo.

Filed Jan. 21, 1972, Ser. No. 219,659

Int. Cl. F16m *13/02*

U.S. Cl. 248—231 **7 Claims**



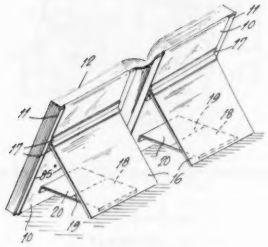
A support bracket device for lanterns and the like consists of an elongated abutment arm, a support arm pivoted thereto and rotatable from a storage position aligned with said abutment arm to an operative position generally perpendicular to the abutment arm, and a strap secured to said abutment arm at a right angle therewith and adapted to encircle a tree or the like for securing the abutment arm in aligned abutting relation with the tree or other upright columnar member.

3,785,605

BOOK PROP

Hemant Parekh, 20 Woodcliff Ave., North Bergen, N.J.

Continuation-in-part of Ser. No. 36,228, May 11, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,423
Int. Cl. A47b 23/00
U.S. Cl. 248—455 6 Claims



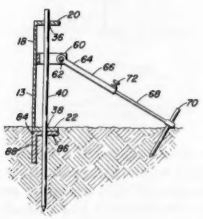
A book prop is provided for holding open a book in an inclined position for reading without obscuring any of the printed subject matter and providing a steady support regardless of the distribution of the pages of the book. The book prop can be made as two separate identical elements or as an integral piece.

3,785,606

MECHANISM FOR FORMING A FOUNDATION

Melvin Perry Green, 608 N. E St., Imperial, Calif.

Filed July 31, 1972, Ser. No. 276,773
Int. Cl. E01c 7/00
U.S. Cl. 249—3 2 Claims



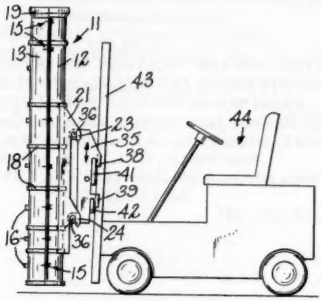
The mechanism comprises a base having a narrow vertically extending and horizontally elongated section and a relatively wide and horizontally elongated top section. The top section supports a foundation form that, in one embodiment, is flexible for forming a curved foundation; and in another embodiment the form is a channel. The form and the top section of the base are constructed to provide a series of vertically aligned guides spaced horizontally from one another to receive stakes. The form is connected with one of the ends of each of a plurality of longitudinally extendible and contractable braces, and the other ends are held in place by stakes. In the embodiment in which the form is a channel, like channels have their adjoining ends connected with hinges that provide for longitudinal adjustment thereof. Too, when a plurality of transversely disposed channels are to be interconnected, one of the channels may abut another channel intermediate the ends of the latter. In that event, clamping mechanism is provided for connecting the channels together.

3,785,607

APPARATUS FOR MOLDING CONCRETE COLUMNS

George W. Worker, Hamden, and Philip L. Waddington, North Haven, both of Conn., assignors to Leonard Concrete Pipe Co., Inc., Hamden, Conn.

Filed Dec. 30, 1971, Ser. No. 214,099
Int. Cl. E04g 13/02
U.S. Cl. 249—48 5 Claims



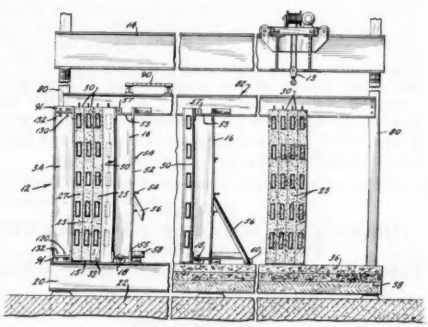
Apparatus for molding concrete columns wherein an elongated shell has a pair of longitudinal sectors which are hinged to swing between closed and open positions so that the finished concrete column may be removed from the shell. Latches are provided for temporarily locking the sectors in the closed position and the periphery of the shell is provided with hooks which enable the shell to be transported between concrete column processing stations. A supporting jig separate from the shell permits the shell to be supported on the cross members of the lifting track of a fork lift tractor.

3,785,608

JIG FOR PRECASTING A PLURALITY OF PANELS

Arthur H. Heinzman, 1433 Laburnum St., McLean, Va.; Henry G. Clifton, Jr., 8955 Colesbury Pl., Fairax, Va., and Robert A. Theobald, 5714 Marengo Rd., Bethesda, Md.

Filed May 28, 1971, Ser. No. 147,886
Int. Cl. B28b 7/22
U.S. Cl. 249—161 5 Claims



A jig for precasting a multiplicity of panels, one against another, and a demountable panel precasting plant containing a multiplicity of such jigs set in succession to form a precast wall panel plant are disclosed. Each jig comprises a fixed end wall for shaping the back face of the initial panel, a movable form in which the front face and side walls are shaped and a jig base on which the movable form reciprocates.

The jig base may be a concrete slab bounded at its side edges by a pair of beams which serve as tracks for the movable form.

A row of columns alongside each side of the jig base supports a cross beam to which the movable jig may be locked at the successive locations along the jig base corresponding to successive panel thicknesses so that each jig may cast panel against panel with the back face of all panels other than the initial panel formed against the front face of the previously cast panel. The movable jig may also be locked to the tracks.

3,785,609

DEVICE FOR THE TREATMENT OF FERROUS METAL INGOTS WHICH ARE INTENDED TO BE REMOVED FROM MOLDS WITHOUT HOLD-UP PERIODS

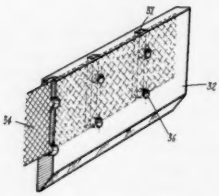
Andre Daussan; Jean Charles Daussan, and Gerard Daussan, all of 9, Avenue Leclerc de Hauteclocque, Metz, France

Filed Sept. 27, 1971, Ser. No. 183,767

Claims priority, application France, Oct. 7, 1970, 7036202

Int. Cl. B22d *7/10*

U.S. Cl. 249—197 **4 Claims**



The device is constituted by a heat-insulating and/or exothermic lining, comprising a single element or a number of juxtaposed elements, provided with a metallic reinforcement which has an extensive open structure and forms meshes. One portion of the meshes is embedded in the thickness of the lining, whilst another portion, adjacent to the volume which is filled with molten metal, is uncovered. Since the contact surfaces between the mold and the metallic portions which serve to clamp the lining to the mold are quite small, the transmission of heat from the metal to the upper portion of the mold is greatly reduced with respect to known devices. Moreover the manufacture of each element only requires placing the corresponding portion of the reinforcement in a mold with permeable walls, wherein a slurry is fed; and the bonds between the lining, the reinforcement and the ingot are improved, which allows early displacement of the ingot after its removal from the mold.

3,785,610

CONCRETE WALL FORM TIE ROD ASSEMBLY WITH TWIST-OFF SPACER MEMBERS

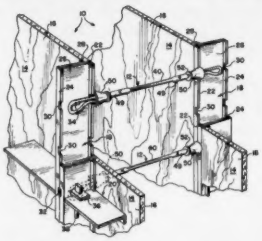
Richard T. Dagiel, Elk Grove Village, Ill., assignor to Symons Corporation, Des Plaines, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,072

Int. Cl. E04g *17/06*

U.S. Cl. 249—214 **4 Claims**

A concrete wall form tie rod assembly in which the tie rod has (a) looped ends for connection to opposed and spaced apart wall form panels, (b) breakbacks by means of which the rod may be fractured in order to permit removal of the looped ends of the tie rod from the hardened concrete wall, and (c) molded torque receiving plastic spacer members which are of special construction and make such interlocking engagement with the looped ends of the tie rod that, when said looped ends are twisted, the spacer members are wrested from the



hardened concrete wall along with the looped ends of the tie rod.

3,785,611

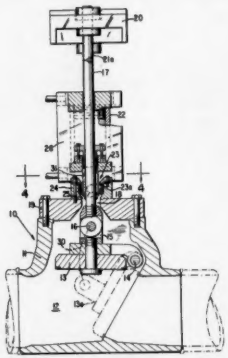
SWING DISC CHECK VALVE

Roland Di Sabatino, Jr., Collingswood, N.J., assignor to Ametek, Inc., New York, N.Y.

Filed July 13, 1972, Ser. No. 271,633

Int. Cl. F16k *31/143*

U.S. Cl. 251—25 **6 Claims**



A swing disc check valve has a closure or disc member swingably mounted within a valve body to open and close a passage therethrough. A rigid actuating member is pivotally connected to the disc member and extends outwardly of the valve body through a pivotable joint means mounted on the body. The actuating member is actuated by means positioned externally of the body and is guided by the pivotable joint means during the swinging movement of the disc member between open and closed positions.

3,785,612

QUICK-ACTING GATE VALVE

Siegfried Schertler, Haag, Switzerland, assignor to VAT Aktiengesellschaft fur Vakuum-Apparate-Technik, Haag, Switzerland

Filed Oct. 6, 1972, Ser. No. 295,642

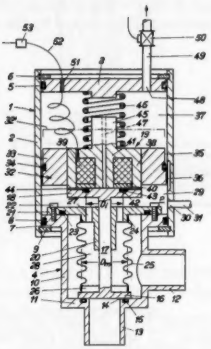
Claims priority, application Switzerland, Oct. 25, 1971, 15489/71

Int. Cl. F16k *31/12*

U.S. Cl. 251—43 **7 Claims**

A quick-acting valve having a valve closure disc connected by a spindle or stem to the holding plate of an electromagnet incorporated in a spring biased piston disposed in a pneumatic

cylinder. The face of the holding plate is partially undercut so that when the valve is open and the elctromagnet is deenergized, the fluid pressure acting on the undercut surface and on the closure disc abruptly moves the plate, spindle and disc toward the closed position. As soon as the plate separates



from the magnet its effective surface area increases, which accelerates the valve closing. The spring thereafter urges the piston against the plate to maintain the valve closed. To open the valve the pressure above the piston is vented and the magnet is energized, which forces the piston, plate, spindle and disc upwards against the spring force.

3,785,613

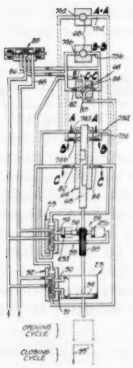
SEQUENCING VALVE CONTROL APPARATUS AND SYSTEM

Joseph A. R. Picard, 9792 La Arena Cir., Fountain Valley, Calif.

Filed Nov. 15, 1971, Ser. No. 198,745

Int. Cl. F16k *31/12*; **F01b** *21/02*; **F01l** *15/00*

U.S. Cl. 251—56 **8 Claims**



Control and power actuating means for the sequential operation of a valve component, particularly of relatively large valve units, wherein the valve component is required to be moved in going from one operating position to another through a succession of linear and rotational movements in opposite directions, in which one power actuator is selectively energizable to move a positioning member for the valve component in axially reciprocal directions, and another power actuator is selectively energizable to rotate the positioning member in opposite directions, sequential or cyclic operations of the actuators for changing the valve from one operating position to another being interlocked and determined by a sequencing valve which is responsive to movements of the valve positioning member.

3,785,614

HYDRAULIC SHIFT VALVE FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION

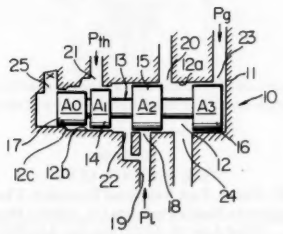
Koji Enomoto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 27, 1971, Ser. No. 193,017

Claims priority, application Japan, Oct. 29, 1970, 45/107900 [U]

Int. Cl. F16k *31/143*

U.S. Cl. 251—63 **3 Claims**



A hydraulic shift valve for effecting a shift between a plurality of gear ratios in an automotive automatic power transmission, which shift valve includes a valve spool movable to two extreme positions and having thereon at least three spaced valve spool lands, an inlet port adapted to be opened and closed by an intermediate valve land, an outlet port selectively communicating with the inlet port, a hydraulic throttle pressure port provided at a position to cause the pressure therein to selectively act on one of remaining two valve lands, a governor pressure port provided at a position to cause the pressure therein to continuously act on the other one of the remaining valve lands, and a line pressure port provided at a position to cause the pressure therein to selectively act on the differential area between the intermediate valve land and the one of the remaining valve lands, the valve spool being shifted in response to variations in the relative magnitude of the pressures acting thereon.

3,785,615

EMERGENCY TRIP THROTTLE VALVE

John B. Haven, Lunenburg, Mass., assignor to General Electric Company, Schenectady, N.Y.

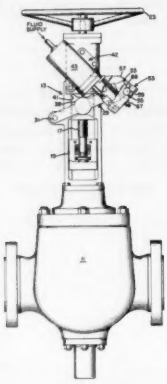
Filed Sept. 1, 1972, Ser. No. 285,750

Int. Cl. G05g *17/00*; **F16k** *31/44*

U.S. Cl. 251—74 **8 Claims**

A latching mechanism for an emergency trip throttle valve of the type used to rapidly shut down the flow of steam to a steam turbine. In the reset position with the valve unseated, a latching-up lever supports the valve in an open position against the force of a valve closing spring. In turn, the latching-up lever is supported by a rotatable latch pin. The geometry of the latch pin and latching-up lever causes the valve supporting force to be transferred from the latching-up lever to the latch pin, in a direction acting through the center of rotation of the latch pin. This tends to prevent self-tripping due to vibration and reduces the friction moment required to

trip by eliminating all components of the valve supporting force, but that which acts directly through the latch pin



center. Additionally, adjustments are provided for insuring the perfect alignment of the latching-up lever and the latch pin.

3,785,616

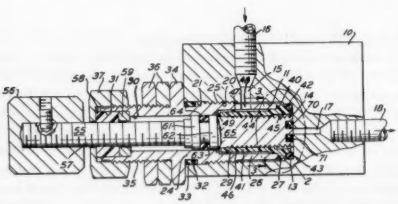
METERING VALVE

Coleman B. Moore, East Nantmeal Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed July 15, 1971, Ser. No. 162,763

Int. Cl. F16k *47/06*; F15d *1/10*

U.S. Cl. 251—121 **4 Claims**



A metering valve for precision flow control of fluids is shown having a body with a valve stem in threaded engagement in a valve holding member in the body for advancing and retracting movement to adjust the position of the stem. The body has a bushing or sleeve, preferably of resilient synthetic plastic material interposed between inlet and outlet fluid connections and exposed to the upstream pressure and a portion of the valve stem extends into the sleeve which portion is provided with a tapered helical thread or groove for fluid flow. The pitch of the threads on the threaded portion and the pitch of the tapered helical groove can be the same or slightly different. Provision is made for shut off of flow. The sleeve is preferably of a composition having a reduced coefficient of thermal expansion normal to its axis for use at elevated temperatures.

3,785,617

METHOD FOR INSERTING TENDONS INTO SHEATHING

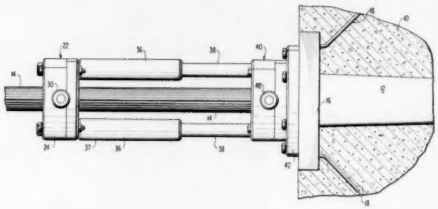
Rene Friedrich, Saratoga, Calif., assignor to VSL Corporation, Los Gatos, Calif.

Filed Dec. 15, 1971, Ser. No. 208,129

Int. Cl. E21b *19/00*

U.S. Cl. 254—1 **1 Claim**

A reinforcing tendon is inserted axially into an elongated passage formed in concrete, soil or rock, by gripping the tendon externally of the passage with a hydraulically operated clamp and moving the clamp towards the passage by means of a pair of hydraulic rams so that the tendon is pushed in its longitudinal direction into the passage. The tendon is fully inserted in a series of steps governed by the strokes of the hydraulic rams. At the conclusion of each stroke, the clamp is released from the tendon and returned along the tendon away from the passage to its starting position where it is ready to again grip the tendon and be moved by the rams towards the



passage in the next stroke of the rams to further insert the tendon in the passage. To anchor the rams during their return stroke returning the clamp to its starting position, a second clamp is provided adjacent the mouth of the passage; one of the ends of the rams being connected to the second clamp to be anchored relative to the tendon when the second clamp grips the tendon. Any suitable control system may be provided for automatically operating the clamps and the rams in the proper sequence.

3,785,618

VEHICLE JACK

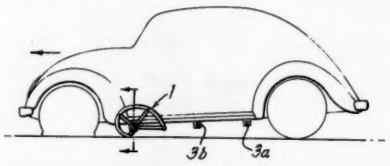
Joseph P. Medwick, 4938 St. Suzanne St., Pierrefonds, Quebec, and Marcel Thiffault, 1176 Brault Ave., St. Vincent De Paul, Quebec, both of Canada

Filed May 30, 1972, Ser. No. 257,711

Claims priority, application Canada, Dec. 21, 1971, 130776

Int. Cl. B66f *7/22*

U.S. Cl. 254—94 **6 Claims**



A vehicle jack for use with a vehicle having at least one socket mounted on the vehicle for nonrotatably receiving a shaft portion of the jack. A lifting member with a hub is rotatably mounted by its hub on the shaft portion of the jack extending out from the socket. The lifting member has a ground contacting portion extending about at least a portion of the hub and arcuately curved whereby the ground contacting surface steadily increases in radial distance from the center of the hub.

3,785,619

INSULATOR AND SUPPORT FOR ELECTRICALLY CHARGED FENCE WIRES

George F. Oltmanns, 2528 Pensacola Ave., Chicago, Ill.

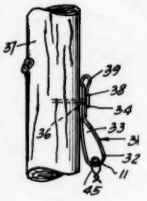
Division of Ser. No. 118,406, Feb. 24, 1971, Pat. No. 3,684,247. This application May 19, 1972, Ser. No. 255,037

Int. Cl. E04h *17/24*

U.S. Cl. 256—10 **2 Claims**

A reusable insulator and support for attaching electrically charged fence wire to fence posts or rods comprises a flexible,

strip-form member composed of a dielectric material. The support member has a portion deflectable into a configuration



for encircling the fence wire and is attachable to the fence post in a manner to support the fence wire on the post.

3,785,620

MIXING APPARATUS AND METHOD

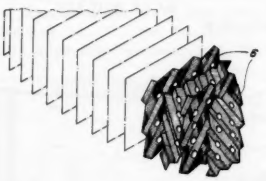
Max Huber, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 2, 1971, Ser. No. 149,230

Claims priority, application Switzerland, Apr. 29, 1971, 6303/71

Int. Cl. B01f *5/06*

U.S. Cl. 259—4 **7 Claims**



The mixable media are passed in uniflow relation through one or more packing elements composed of corrugated lamellas so that a thorough mixing takes place within the packing elements. The corrugations of adjacent lamellas are oriented in different directions while adjacent packing elements are angularly offset from each other.

3,785,621

PREPARATION OF MIXES

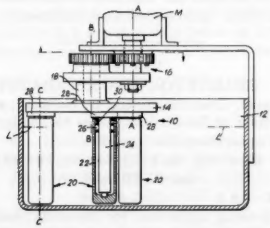
Leonard Maxwell Hoskins, Hughenden Valley, England, assignor to National Research Development Corporation, London, England

Filed Sept. 28, 1970, Ser. No. 76,066

Claims priority, application Great Britain, Sept. 29, 1969, 47,872/69

Int. Cl. B01f *7/26;* **B29h** *1/10*

U.S. Cl. 259—102 **5 Claims**



Methods and apparatus are described for discouraging the formation of unwanted lumps which tend to form when preparing mixes of certain components, especially of fibres and a slurry. A mixing agitator, which is moved relative to the mix, is arranged to have a further motion such as by being free to rotate, or by being rotated, in response to conditions within the mix.

3,785,622

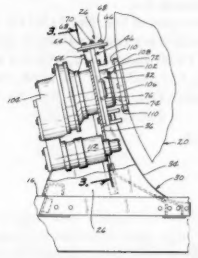
MOUNTING DEVICE FOR MOBILE CONCRETE MIXING DRUM

James E. Johnson, Waterloo, Iowa, assignor to Construction Machinery Company, Waterloo, Iowa

Filed Oct. 2, 1972, Ser. No. 294,216

Int. Cl. B28c *5/18*

U.S. Cl. 259—176 **12 Claims**



The present invention comprises a mounting means for a concrete mixer drum having one end adapted to be mounted rotatably to a truck. A power shaft is fixed to the drum for rotating it and the power shaft is rotatably mounted within a power shaft housing. The mounting means comprises a collar surrounding and gripping the power shaft housing, the collar having an upper mounting member and a lower mounting member thereon. The upper mounting member is rotatably mounted to a support means for rotation about an upstanding axis, and the lower mounting member is mounted in a ball and socket joint to the support means so as to carry the weight of the concrete mixer. The support means is fixed to the truck frame so that the ball and socket joint transfers the weight of the mixing drum to the truck frame.

3,785,623

DOUGH PORTIONING MACHINE

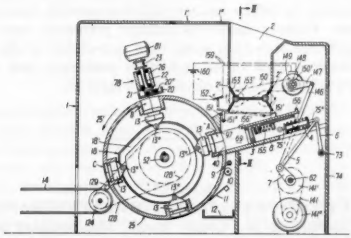
Helmut Konig, Ursprungweg 70-72, Graz, Austria

Continuation-in-part of Ser. No. 232,756, March 8, 1972, Pat. No. 3,733,058. This application Sept. 11, 1972, Ser. No. 288,159

Claims priority, application Austria, Sept. 13, 1971, 7938

Int. Cl. A21c *7/06*

U.S. Cl. 259—185 **10 Claims**



Dough to be portioned is filled into a hopper, which leads to a chamber from which the dough is forced by means of a plunger into pocket openings arranged on the circumference

of a rotating drum. Two rotary members are arranged in the hopper, each of which carries three blades serving for preportioning the dough. Below the rotary members a dough sensing means is arranged responsive to the quantity of dough delivered by the rotary members to the chamber. The dough sensing means cooperate with a switch for stopping the movement of the rotary members, if too much dough is delivered to the chamber.

3,785,624

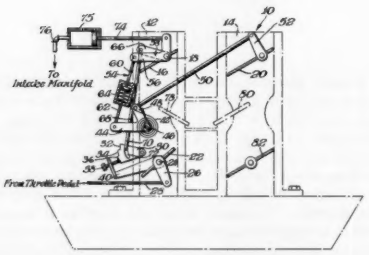
CARBURETOR

Frederick J. Marsee, Clawson, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 812,519, Feb. 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 700,321, Jan. 3, 1968, abandoned, which is a continuation-in-part of Ser. No. 551,463, May 19, 1966, abandoned. This application Oct. 12, 1970, Ser. No. 80,106

Int. Cl. F02m *1/10*

U.S. Cl. 261—23 A **14 Claims**



Automatic choke for primary and secondary carburetor barrels of gasoline engine has temperature-responsive means connected to primary choke plate and to secondary choke plate, connection to primary plate being yieldable to permit primary plate to be moved toward open position by intake suction and/or intake air flow while secondary choke plate stays closed. When power operation is needed during choked condition, secondary throttle opens giving proper choked operation of secondary barrel which can also have intake suction and/or intake air flow arrangements for moving secondary choke plate toward open condition. Automatic choke can have temperature-adjusted control for variably limiting opening of choke by intake suction and thus provide better performance. Primary induction passage preferably has small cross-sectional area (not more than one-eighth of the total cross-sectional area of all induction passages), and idling desirably arranged to take place on the main jet.

3,785,625

INJECTOR TYPE EVAPORATIVE HEAT EXCHANGER

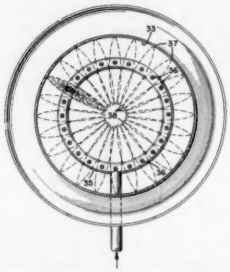
John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed May 19, 1971, Ser. No. 144,857

Int. Cl. B01f *3/04*

U.S. Cl. 261—29 **1 Claim**

This application discloses an evaporative heat exchanger of the injector type with improvements in mixing and air pumping which are specially adapted to either multiple circular venturies or large circular venturies or both.



3,785,626

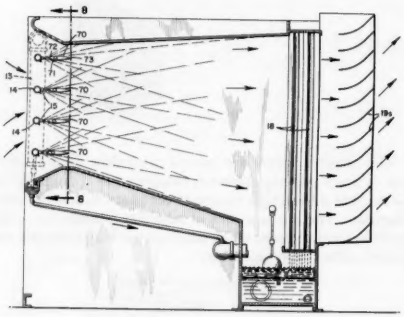
CONTROL SYSTEM FOR INJECTION COOLING TOWERS

Wilson E. Bradley, Jr., Ellicott City, and Edward N. Schinner, Silver Spring, both of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed May 19, 1971, Ser. No. 144,855

Int. Cl. B01f *3/04*

U.S. Cl. 261—36 R **7 Claims**



A control system for injection evaporative heat exchangers comprised of a chamber having a mouth, a throat, and a region downstream of the throat between it and the exhaust opening. Water is injected into the throat and induces air flow into the mouth and causes mixed concurrent flow downstream of the throat. Air is discharged from the exhaust opening and cooled water is collected. Controls are provided by which the amount of air pumped per unit time is controllable to accommodate the unit to variable heat load conditions.

3,785,627

CHARGE FORMING APPARATUS

John J. Tuzson, Evanston; Irving H. Hallberg, and James R. Vaughn, both of Des Plaines, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

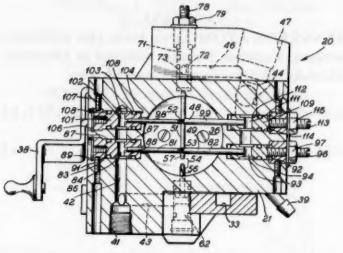
Filed Aug. 18, 1972, Ser. No. 281,891

Int. Cl. F02m *7/14*

U.S. Cl. 261—36 A **14 Claims**

Charge forming apparatus for metering fuel in which a stream of induction air impinges upon a stream of liquid fuel for changing the shape thereof. Fuel is stripped from the reformed liquid stream for dispersion into the air stream. Sin-

gle or multiple fuel streams may be employed. The apparatus avoids the use of a float thereby facilitating up draft, side



draft, or down draft mounting. One embodiment eliminates the choke plate providing a compact structure having a short air induction passage.

3,785,628

DEVICE FOR THE IMPLEMENTATION OF PROCEDURES FOR THE DECONTAMINATION OF INTERNAL COMBUSTION ENGINE EXHAUST GASES

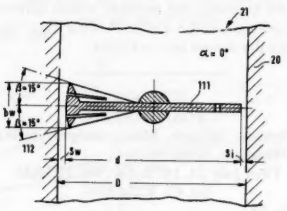
Ludwig G. Lang, Zimmerstrasse 10-12, Darmstadt, Germany

Filed Aug. 14, 1972, Ser. No. 280,229

Claims priority, application Germany, Aug. 16, 1971, P 21 40 910.9

Int. Cl. F02m *29/14*

U.S. Cl. 261—65 **15 Claims**



A device for the implementation of procedures for the decontamination of internal combustion engine exhaust gases by preparation of a flammable and ignitable air-fuel mixture with a variable air ratio figure λ by means of a throttle flap adjustment regulating the fuel jet hydraulic resistance, and which is adjustable such that fuel atomization is performed, using a throttle flap permitting a tolerated air gap all around the circumference in the carburetor duct for the throttle flap position $\alpha = 0°$, which has rims with bores on both sides, and which is followed by a ramjet in the carburetor duct.

3,785,629

APPARATUS FOR GAS DIFFUSION

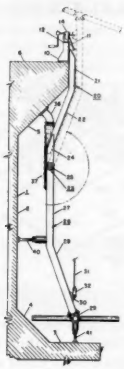
Lawrence A. McKinney, Tucson, Ariz., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1971, Ser. No. 108,041

Int. Cl. C02c *1/12*

U.S. Cl. 261—122 **4 Claims**

A plurality of high density polyethylene or polyvinylchloride, plastic, diffuser elements are supported on a horizontal distribution header which is in turn supportedly suspended within a waste treatment basin from at least two vertically oriented elongated members. The elongated members are each provided with a hinged joint so that the diffusers can be rotated about the hinged joint to a location out of the basin for cleaning or replacement.



3,785,630

GAS COLLECTOR FOR STEEL FURNACE

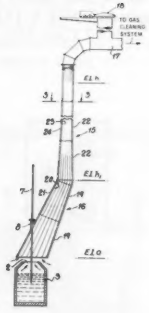
Daniel E. Pike, Harrington Park, N.J., assignor to Air Pollution Industries, Inc., Englewood, N.J.

Division of Ser. No. 80,332, Oct. 13, 1970, Pat. No. 3,707,069.

This application Sept. 18, 1972, Ser. No. 289,817

Int. Cl. C21c *5/40*

U.S. Cl. 266—16 **2 Claims**

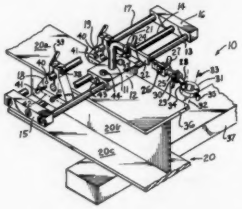


Water-cooled, panel-constructed tapered hood over mouth of steel furnace leads to water-cooled, panel-constructed stack having approximately parabolic vertical cross-section to increase velocity and velocity pressure of off-gas and to reduce static pressure of off-gas and maintain such static pressure at a negative value throughout stack. Off-gas will not leak out between panel joints. Same effect may be achieved by inserting orifice plate in bottom of conventional stack. Inner wall of hood and stack lined with ceramic to reduce cooling water requirement, only enough cooling water being required to prevent ceramic from melting, cooling of off-gases more economically being handled in gas cleaning system.

3,785,631
PARTING AND BEVEL BURNING DEVICE

Stanley Peter Prye, 2222 Brandard, Houston, Tex.

Continuation-in-part of Ser. No. 108,008, Jan. 20, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 299,642
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 K **10 Claims**

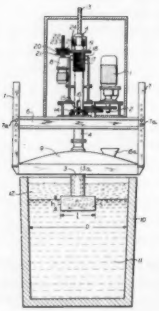


The disclosure is to a device which can be employed in combination with a welding torch fixed therein in a predetermined position and direction, the device being adapted to be moved, carrying the torth therewith, in straight line direction, or to be swung in cutting with a predetermined radius. The device, as used in straight line parting or beveling, may be fixed to a structural member that is to be beveled or parted, or otherwise cut in any predetermined manner. To cut a circle or arc, the device is adapted to be magnetically or otherwise mounted on the plate or shape thus to be cut.

3,785,632
APPARATUS FOR ACCELERATING METALLURGICAL REACTIONS

Friedrich Kraemer, Mulheim; Jorn Mandel; Siegfried Mayer, both of Gelsenkirchen; Klaus Rohrig, Essen; Hans-Peter Schulz, Hattingen; Hilmar Weidenmuller; Klaus Dieter Haverkamp, both of Gelsenkirchen, and Jurgen Motz, Ratingen, all of Germany, assignors to Rheinstahl Huttenwerke, Essen, Germany

Division of Ser. No. 843,868, March 17, 1969, Pat. No. 3,664,826. This application Mar. 9, 1972, Ser. No. 233,237
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 A **7 Claims**

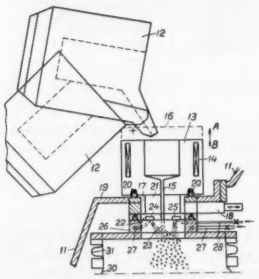


Apparatus including means for adjusting vertically the level of a mechanical stirring member with respect to the vertical level of a melt, e.g. the vertical level of the interface between the top surface of an iron melt and slagging or the like ingredients floating on such iron melt surface especially in a circular upright ladle with a discharge aperture, and method of using such stirring member, e.g. to enhance or accelerate contact and reaction between such melt and floating ingredients, to carry out metallurgical reactions, as well as tough cast iron containing spherical graphite producible thereby.

3,785,633
MEANS FOR ATOMIZING MOLTEN METAL

Gosta Karlsson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vastras, Sweden

Filed May 8, 1972, Ser. No. 250,922
Claims priority, application Sweden, May 12, 1971, 6133/71
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **6 Claims**

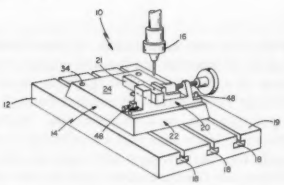


An arrangement for atomizing molten metallic material includes a furnace for tapping into a container and a cooling section. The furnace and container (crucible or ladle) are enclosed in a tank wherein they can be subjected to vacuum. The container is raisable and lowerable with respect to the cooling section, so that a closure valve can be inserted between them when suction is being applied. In the lowered position the container rests on a connecting member which contains nozzles for gas directed against the stream flowing from the container to disintegrate the stream into particles.

3,785,634
POSITIONING

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Filed July 21, 1972, Ser. No. 273,833
Int. Cl. B23g *3/06*
U.S. Cl. 269—71 **9 Claims**

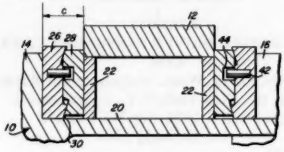


The invention features a positioning device comprising a workpiece support platform having a planar upper surface, a plurality of linkages, a linkage support member, means connected to the linkage support member for engaging a rotary tool machine, and means for supporting the platform with the upper surface thereof perpendicular to the axis of rotation of the rotary tool of the machine, each linkage being connected for pivotal motion about a first fixed axis relative to the platform and for pivotal motion about a second fixed axis relative to the linkage support, and the distance between the first and second axes being the same for each linkage.

3,785,635
WORKPIECE HOLD-DOWN JAWS WITH CONSTANT DIMENSION

Carl O. Lassy, 96 Bohemia, Bristol, Conn., and William A. Lassy, 73 Grove Ave., Forestville, Conn.

Filed Apr. 1, 1971, Ser. No. 130,394
Int. Cl. B23q *3/02*
U.S. Cl. 269—136 **7 Claims**

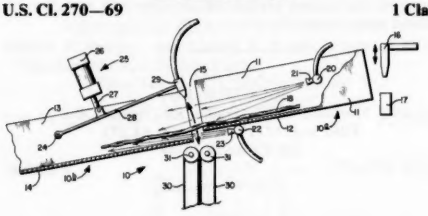


A hold-down for workpieces including a bed and a pair of upstanding opposed jaws mounted thereon with at least one jaw being movable in relation to the other with at least one jaw also including a structure which will exert a downward force on the workpiece when the jaws are moved toward each other into clamping engagement with the workpiece to assure positive contact of the workpiece with the bed of the hold-down, parallel or the like. The means exerting the downward force includes engaging inclined surfaces and engageable flat surfaces which will come into contact when the movable component of the jaw has reached a predetermined position in its downward movement thereby providing a predetermined dimension for the jaws which is necessary in many machine operations.

3,785,636
BAG FOLDING APPARATUS

James L. Bitting, Baton Rouge, La., and Robert J. Hagens, Richmond, Va., assignors to Ethyl Corporation, Richmond, Va.

Filed Sept. 20, 1971, Ser. No. 182,081
Int. Cl. B65h *45/00*
U.S. Cl. 270—69 **1 Claim**



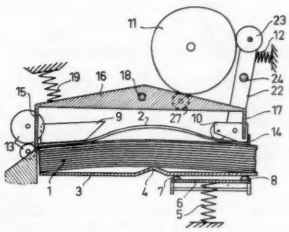
Apparatus for folding a flat, non-self-supporting, thermoplastic bag. An inclined support surface receives a plastic bag which is prevented from wrinkling or bunching by means of jets of compressed air directed against the top surface of the bag and optionally against a portion of the bottom surface of the bag. A reciprocating air nozzle creases the bag in the center and introduces the bag into the first of a series of folding belts.

3,785,637
DEVICE FOR THE DELIVERY, ONE BY ONE, OF PIECES OF FILM FROM A STACK

Lucas van der Does, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Dec. 17, 1971, Ser. No. 209,119
Claims priority, application Netherlands, Jan. 4, 1971, 7100002
Int. Cl. B65h *3/24, 3/54*
U.S. Cl. 271—24 **2 Claims**

A device for the delivery, one by one, of rectangular pieces of film from a stack, the stack being incorporated in a storage magazine with a substantially flat pressure plate keeping the stack by spring pressure against retaining members acting upon the top film, at least one of the retaining members being a pressure member that can move to and fro near one side of the stack, which pressure member can push one edge of the top film toward the opposite edge, as a result of which the top film is released from the stack over a large part of its surface. The invention being that the direction of active movement of the pressure member coincides with the direction in which the films are delivered, that near the delivery end of the magazine

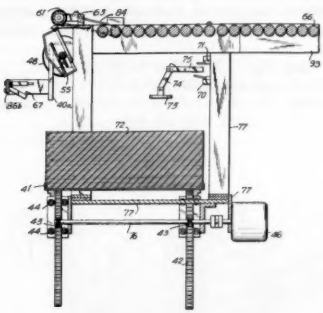


a blocking device is provided which can be moved into the path of the top film, causing it to bulge during the active movement of the pressure member, and that furthermore a second blocking device is provided which, near the end of the active movement of the pressure member, is pressed behind the pushed-up edge of the top film of the stack, and presses it back, counter to the spring force acting upon, to such an extent that the top film is released from the retaining members and after removal of the first blocking device, can extend freely in one direction of delivery.

3,785,638
FABRIC PICKUP AND TRANSFER DEVICE

Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 5,809, Jan. 26, 1970, Pat. No. 3,611,957. This application Aug. 31, 1971, Ser. No. 176,606
Int. Cl. B65h *3/20*
U.S. Cl. 271—33 **6 Claims**



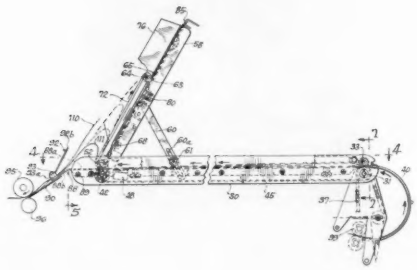
A pick-up and transfer device is provided which holds fabric workpieces in a stacked relationship, separates and picks up the workpieces individually by means of an adhesive tape, if needed in an inverted face-up or face-down relationship, transfers the workpieces from a lower position to an upper position, and advances the individual workpieces to subsequent garment forming devices.

3,785,639

SHEET STACKING APPARATUS FOR A DUPLICATING MACHINE OR THE LIKE

Bernard M. Ziebka, Morton Grove, and Paul A. Tamburrino, Hoffman Estates, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed June 6, 1972, Ser. No. 260,110
Int. Cl. B65h 5/02, 9/14
U.S. Cl. 271—46 10 Claims



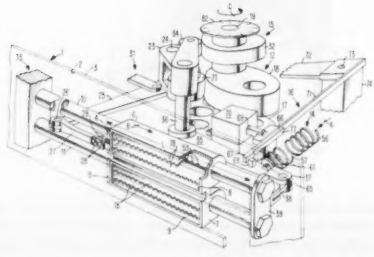
The duplicating machine includes an electrostatic copying unit, a conversion unit for converting each electrostatic copy to form a master sheet, and a duplicating unit for making a number of copies by direct contact between each master and receiving sheets. The stacking apparatus is mounted between the conversion unit and the duplicating unit and is adapted to stack masters in inclined relationship with a portion of the upper surface of each successive master in coextensive contact with a corresponding portion of the lower surface of the immediately preceding master. The stacking apparatus includes an inclined planar support with lifting means in the form of driven belts for engaging the underside of the trailing portion of each master. A control system permits the duplicating machine to operate in a continuous and fully automatic manner.

3,785,640

APPARATUS FOR SEPARATING AND FEEDING DOCUMENTS

Henry H. Delcano, Endwell; William M. Demchak, Johnson City, and Marek Jakubowski, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,012
Int. Cl. B65h 3/08, 3/52
U.S. Cl. 271—90 9 Claims



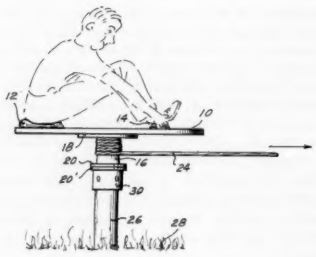
A document separating and feeding apparatus utilizes a retractable and reciprocating separator head of the suction type and is provided with selectively actuable latch means. When actuated, the latch means causes the separator head to be maintained in a retracted position without interrupting the reciprocating motion of the head. Also, mounted on the head is a member with outwardly extending serrated edges. The coaction of the serrated edges and the suction of the head is used to separate and feed the documents.

3,785,641

ROTATABLE CORD DRIVEN PASSENGER CARRYING DISC

Robert N. Muffly, Entiat, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 5, 1972, Ser. No. 295,275
Int. Cl. A63g 1/00
U.S. Cl. 272—46 1 Claim



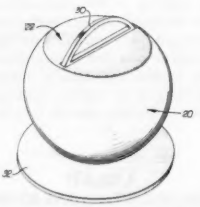
A toy comprising a vertical shaft securable at its lower end in the ground; an axle secured to the top end of the shaft and extending upward therefrom; a horizontal circular disc having a seat and spaced handles on the top surface; a hub disposed rotatably about the axle and secured at its top end to the center of the bottom surface of the disc and a pull cord fastened at one end to the hub.

3,785,642

JOGGER BALL

Pasquale J. Sterlicchi, 611 D Oakdale Rd., Newark, Del.

Filed Aug. 17, 1970, Ser. No. 64,171
Int. Cl. A63b 23/04
U.S. Cl. 272—70 6 Claims



A sealed, partially inflated, flexible ball having a flap top portion and an interior disc centrally dividing the ball vertically into two separate compartments. An air passageway is formed in the disc between the two separated compartments. Thus, when a user stands on top of the flat portion of the ball and shifts his weight from one foot to the other air will flow, correspondingly, to the compartment with the lower pressure thereby inducing a jogging action.

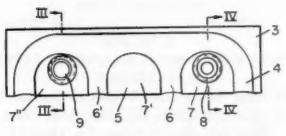
3,785,643
ERRATIC MOVEMENT TETHERED BALL STRIKING TOY
Everett W. Rich, 424 W. Pardee Ln., Stockton, Calif.
Filed Feb. 10, 1971, Ser. No. 114,270
Int. Cl. A63b *69/20*
U.S. Cl. 272—78 **1 Claim**

A tethered ball toy is provided wherein several balls are suspended from a line, at least one of the balls being partially filled with a liquid or solid, or being mounted off-center or attached by a short cord to the line such that when one ball is struck it produces erratic movement of the other ball or balls. The suspending line may contain a resilient spring or a shock cored portion, whereby the erratic movement of the balls is further enhanced thus requiring a high degree of agility and coordination to kick, or otherwise strike, the ball several times.

3,785,644
PULL TYPE EXERCISING DEVICE HAVING WITH FRICTIONAL RESISTANCE TO PULLING
Robert F. Bradley, and Lindell P. Bradley, both of 10792 Maudlin Rd., New Buffalo, Mich.
Filed Nov. 2, 1971, Ser. No. 194,867
Int. Cl. A63b *21/00, 21/20*
U.S. Cl. 272—79 D **12 Claims**

An apparatus for physical exercising in which a bar assembly having a rotatable shaft with reels at opposite ends thereof is connected to a base by ropes or other types of lines wound on the reels. The shaft is enclosed in a tubular member in which it rotates, and hand grips on the tubular member are provided. Any gripping force exerted by a user on the hand grips will be transmitted to the tubular member and to the shaft to resist the force required to rotate the shaft, when the bar assembly is being lifted. The shaft is rotatable in the direction to wind the lines on the reels by a spring mechanism which consists of a cylindrical housing and the shaft about which a spring of strip metal is wound and attached, the spring being of a type which produces essentially its entire torque force at the area where it leaves the coil on the shaft, thereby providing a substantially constant force regardless of the amount of winding of the spring on the shaft.

3,785,645
ELASTIC BAND TYPE EXERCISING DEVICE
Ouziel Yosef, 102, Aloof David St., Ramat-Chen, Israel
Filed Jan. 13, 1972, Ser. No. 217,488
Claims priority, application Israel, Feb. 12, 1971, 36178
Int. Cl. A63b *21/00, 23/04*
U.S. Cl. 272—82 **1 Claim**

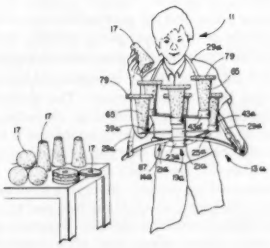


An expander to be used for gymnastic or physiotherapeutic exercises comprising an endless elastic loop and two handles each of which is constituted by two separable halves which define between them an arrangement of internal grooves in such a manner that parts of said loop can be inserted in various configurations within said grooves to adjust the length of the loop according to requirements.

3,785,646
EXERCISING DEVICE
Sol Ruskin, 11 Washington Ave., Lawrence, N.Y.
Filed Apr. 9, 1973, Ser. No. 348,929
Int. Cl. A63b *23/04*
U.S. Cl. 272—57 D **5 Claims**

An exercising device for attachment to the feet in the form of a shoe having weight receiving bores in the soles thereof.

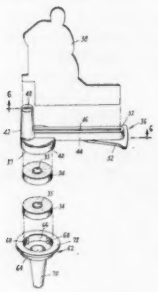
3,785,647
BALANCING DEVICE
Martin Bender, 162 N. Alta Vista Blvd., Los Angeles, Calif.
Filed Oct. 6, 1971, Ser. No. 187,105
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 M **14 Claims**



A device utilized for balancing objects thereon which comprises a support structure in the form of a body rack having at-

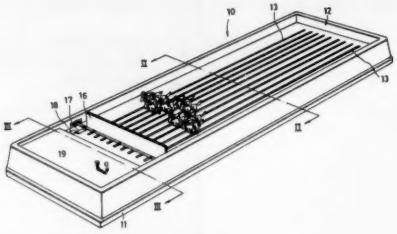
tachment means such as a waist strap for detachably securing the body rack to the body of the user so that his arms can be free for placement of objects. A plurality of transversely extending arms can be carried on the body rack, the arms having support areas or receptacles for balancing objects thereon at spaced locations such as at the ends of the arms. The arms may be rotatably mounted on the body rack, and a drive motor may be provided for causing the arms to slowly rotate in a horizontal plane to increase the difficulty of balancing the objects on the arms.

3,785,648
HOCKEY GAME WITH MAGNETIC CONTROL MEMBERS
Takanori William Kobayashi, Roxboro, Quebec, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.
Filed July 26, 1971, Ser. No. 166,189
Int. Cl. A63f 9/00
U.S. Cl. 273—85 B **5 Claims**



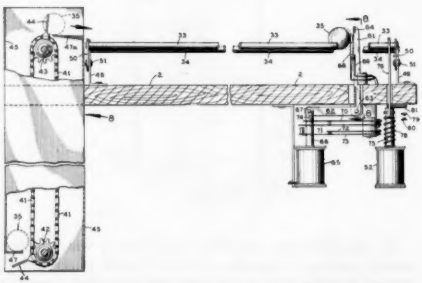
Game apparatus utilizes player pieces and control members which have disposed therein multipolar magnets of circular cross-section having at least four alternately arranged regions of opposite polarity circumferentially positioned thereabout, and which are slidably operable upon a nonferrous playing board with their axes extending perpendicular to the playing surface of the board. The magnet in the player piece is annular and the player piece has a downwardly extending contact element provided by a stud on the base portion of the player piece which extends through the central aperture of the magnet and therebelow to provide limited contact between the body of the player piece and the playing surface of the board. The striking portion of the player piece extends laterally outwardly from the base portion in contact with the upper surface of the board and the player piece is supported upon the contact element and the striking portion. The striking portion desirably comprises an elongated arm extending laterally along the upper surface of the playing board and it has a flared configuration adjacent its free end provided by wing portions which extend outwardly from each side of the arm and which define curvilinear striking surfaces diverging from one another and increasing in curvature towards the free end to control the direction of an object propelled thereby. Interaction between the magnets of a player piece and of a control member through the playing board enables sliding and sharp pivoting movement of the player piece upon the game board, upon manipulation of the control member therebelow.

3,785,649
RACING FIGURES PULLED BY LINES RANDOMLY WOUND ON SPOOLS
Ernst Albin Andersson, Kopmansplan 9, Tumba, Sweden
Filed Dec. 14, 1971, Ser. No. 207,934
Claims priority, application Sweden, Dec. 15, 1970, 16944/70
Int. Cl. A63f 9/14
U.S. Cl. 273—86 G **1 Claim**



A game comprising a box-like rectangular base divided into a top and a bottom portion which are capable of being connected together and in which top portion there is disposed a number of longitudinally extending grooves along which figures are arranged to move freely under the action of pull lines attached to the figures and to associated wind-up spools musted on a driven shaft extending transversally of the grooves. The shaft on which the wind-up spools are mounted is arranged to cooperate with a spring operated clutch mechanism which is operable to lock or to release the spools for rotation relative to the shaft, while switches actuating the shaft drive means are arranged to co-act with means extending in the path of the figures moving along their respective tracks, so that engagement of one of said figures with said means causes the shaft drive means to be deactivated thereby stopping rotation of the shaft and thus also movement of the figures.

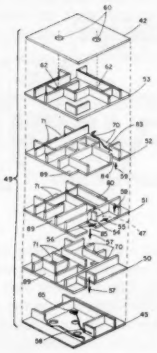
3,785,650
MANUALLY CONTROLLED ELECTRIC PINBALL GAME
Ronald D. Halliburton, Hollywood, Fla., assignor to Allied Leisure Industries, Inc., Hialeah, Fla.
Filed May 15, 1972, Ser. No. 253,289
Int. Cl. A63f 7/16
U.S. Cl. 273—110 **1 Claim**



A typical electric scoring pinball game board resiliently secured within a cabinet and visible through a window as a reflected image in an upstanding mirror. Externally projecting handles move the board in strategic directions to control the path of the ball. One of several novel features includes a visible lateral trackway on which the ball is continuously reciprocated. Each handle contains a button for releasing the ball from the trackway at any desired lateral position during its

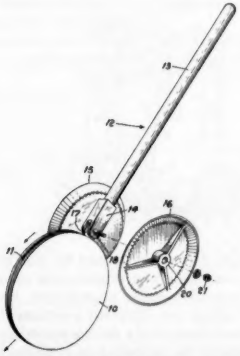
reciprocation for descent onto the board for play. An elevator restores the ball on the trackway for reciprocation at the conclusion of each game.

3,785,651
DICE MAZE PUZZLE
M. Kent Smith, 5532 Radnor Rd., Indianapolis, Ind.
Filed Apr. 17, 1972, Ser. No. 244,582
Int. Cl. A63b *67/00*
U.S. Cl. 273—113 **8 Claims**



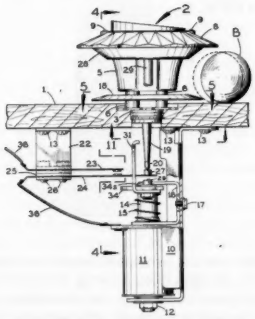
A cube having a maze contained therein through which a ball is movable. The puzzle has a transparent outer enclosure containing the maze and ball. Nontransparent intermediate walls are positioned inwardly of each transparent wall providing a space on each side of the cube in which the ball is freely movable. The nontransparent intermediate walls are provided with the holes through which the ball is passable to the maze within the intermediate walls. One hole is bisected by an inner wall thereby allowing the ball to go in one of two opposite directions. The maze extends vertically and horizontally through the cube.

3,785,652
STICK WITH PUSH ROLLER AND ROTATABLE GUIDE WHEELS FOR PUSHING A GROOVED DISC
Massud K. Ghovanloo, 241 Shoreward Dr., Great Neck, N.Y.
Filed May 15, 1972, Ser. No. 253,505
Int. Cl. A63h *33/02*
U.S. Cl. 273—126 R **8 Claims**



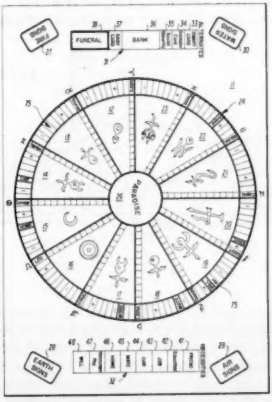
A disc game to be played between opposing players along the lines of hockey or Lacrosse comprising a disc having an annular circumferential groove in the rim thereof and a handle-guide assembly for driving and controlling the disc. One end of the handle assembly has two free-running guide wheels having inward facing opposed beveled surface portions and a pushing roller, also free-running, located in between the guide wheels. The beveled guide wheels are spaced apart an amount slightly greater than the disc thickness to facilitate the capture of the disc between the guide wheels and to enable the disc to either be passed to another player having a similar driving stick or to again set the disc into motion.

3,785,653
PINBALL GAME BUMPER ELECTRICALLY RESPONSIVE TO BALL IMPACT
Ronald D. Halliburton, Hollywood, Fla., assignor to Allied Leisure Industries, Inc., Hialeah, Fla.
Filed Feb. 2, 1973, Ser. No. 329,213
Int. Cl. A63f *7/00*
U.S. Cl. 273—127 R **5 Claims**



A pinball game bumper assembly for receiving the impact of a ball from any lateral direction against a trigger element, the displacement of which element will operate and clos" a normally open electric switch for energizing a solenoid for restoring the bumper to its original idle position with the switch held open including a safety element for preventing successive ball impacts in a single game to operate the trigger element and switch, which also is adapted to energize a circuit to a scoring means.

3,785,654
ASTROLOGICAL BOARD GAME APPARATUS
Marian W. Chambers, 2458 Romain Way, East Point, Ga.
Filed Nov. 15, 1971, Ser. No. 198,558
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 C **2 Claims**



A game using principles of astrology with a game board divided into twelve "houses" of the zodiac. Each player moves

his playing piece around a circular portion of the game board in response to a thrown die and various instructions on the game board and on cards drawn by the player. The object of the game is to be the first player to ascend up "jacobs ladder" into "paradise." Landing upon the various spaces of the game board subjects the players to negative and positive reactions to either a bad or good "aspect" that may be expected from a particular planet as it traverses each house of the zodiac. The playing pieces correspond in shape to the players' houses of the Zodiac on the game board.

3,785,655

DOMINO TYPE GAME APPARATUS

Jack D. Babb, 420 Bonita, Jacksonville, Tex.

Filed July 14, 1972, Ser. No. 271,691
Int. Cl. A63f *9/20*
U.S. Cl. 273—137 C **10 Claims**

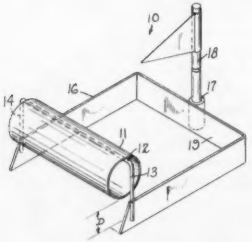
Twenty-eight pieces, as in dominoes, each have first and second indicia selected from a group of seven indicia which may be the dot groups and blank, as in dominoes, or any other selected indicia such as numerals, characters or symbols. Each of the seven indicia appears as the first or second indicia on seven of the pieces, and is therefore common to seven pieces. Additionally each piece has a third indicia, selected from the seven indicia, which is different from its first and second indicia; and each of the seven indicia appears as the third indicia on four pieces. Accordingly each of the seven indicia is common to four additional pieces, or a total of eleven pieces.

3,785,656

GAME DEVICE

Frank Gybowski, 34 Edgewood Way, New Haven, Conn.

Filed Sept. 15, 1972, Ser. No. 289,473
Int. Cl. A63b *57/00, 71/00, 69/36*
U.S. Cl. 273—177 A **4 Claims**



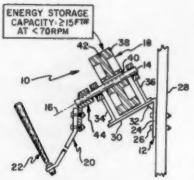
An indicating device for a target for a ball or puck in which an elongated hollow member of low mass in the shape of a cylinder is supported on a small horizontal rod and when struck by an object entering the target will revolve on the rod to give a positive indication of entry or passage through the target. A U-shaped enclosure is located rearward of the cylinder for retaining balls or pucks.

3,785,657

GOLF CLUB SWING TRAINING DEVICE

Bynum W. Moller, P.O. Box 688, Kerrville, Tex.

Continuation-in-part of Ser. No. 201,222, Nov. 22, 1971, Pat. No. 3,738,661, which is a continuation of Ser. No. 53,535, July 9, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 223,937
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A **11 Claims**



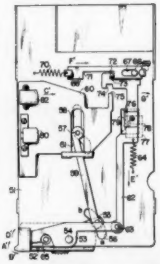
There is disclosed a golf exercising device incorporating a flywheel providing resistance to downswing movement of a simulated golf club. The flywheel also acts to store energy thereby providing a realistic pull on the simulated golf club at the top of the backswing and providing self-powered follow-through movement of the simulated golf club. In one embodiment of the invention, a tachometer is operatively connected to the flywheel to provide a visual indication of how hard the golf club is being swung. Another embodiment of the invention incorporates a gear unit for increasing speed of the flywheel relative to the golf club handle. Another embodiment provides a gear ratio selector for the gear unit to change the relative speeds of the flywheel and the golf club handle.

3,785,658

CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

Hisao Ikeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 783,947, Dec. 16, 1968, Pat. No. 3,622,162. This application July 15, 1971, Ser. No. 165,790
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 C **3 Claims**



A double recording preventing means for use in a small-sized cassette tape recording and reproducing apparatus including a manual operation mode change-over lever and a hole sensing lever taking two different positions depending upon the presence and absence of a double recording preventing hole in a cassette to be recorded or reproduced, and a manual record lever for actuating a record switch through a switching lever in accordance with the position of the hole sensing lever in association with the operation of the change-over lever. On a base plate of the apparatus mounting a slidable plate carrying transducer heads and a pinch roller, the

means comprises a projection in the slidable plate, a hook-like projection of the hole sensing lever, and first and second cutouts of the switching lever engageable with respectively the above-mentioned projections, the projection of the hole sensing lever being engaged with the first cutout in the presence of the double recording preventing hole to render the switching lever immovable, while in the absence of such a hole, the projection of the slidable head carrying plate being allowed to be engaged with the second cutout of the switching lever and shift the switching lever into the recording operating state of the apparatus by simultaneous actuations of the record lever and the operation mode change-over lever.

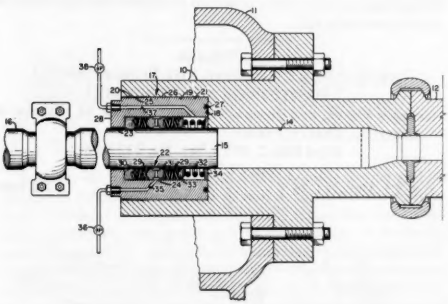
3,785,659

PACKING CARTRIDGE FOR RECIPROCATING PUMP

William C. Maurer, and Everett H. Lock, both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Mar. 17, 1972, Ser. No. 235,515

U.S. Cl. 277—35 **4 Claims**



A packing cartridge for a reciprocating pump which includes a sleeve adapted to be connected to a recessed end of the fluid end housing and a packing assembly mounted in the sleeve. A lubricating port formed in the sleeve extends from an exposed end thereof to the interior of the sleeve and provides means for delivering lubricant to the packing assembly.

3,785,660

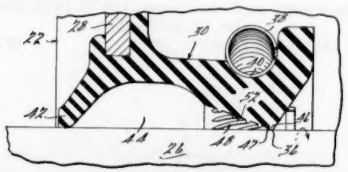
SEAL

Jack A. Bush, Livonia, Mich., assignor to Republic Industrial Corporation, New York, N.Y.

Division of Ser. No. 661,031, Aug. 10, 1967, abandoned. This application Oct. 15, 1970, Ser. No. 81,149

Int. Cl. F16j *15/54, 9/00*

U.S. Cl. 277—134 **2 Claims**



The disclosure relates to oil seals having helical fluid impellers thereon, which are known in the art as hydrodynamic seals. In such seals helical impellers on the air side of the seal converge with the direction of rotation of a shaft. Oil which leaks past the seal is deflected or "pumped" back to the oil side of the seal by the fluid impellers.

3,785,661

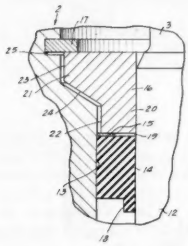
HIGH PRESSURE ROTARY SEAL BACKUP

Hollis N. White, Jr., Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Sept. 21, 1972, Ser. No. 290,779

Int. Cl. F16j *15/54*

U.S. Cl. 277—188 **14 Claims**



A hydraulic motor-pump assembly having an axial chamber formed therein, a pair of relatively rotationally and orbitally movable gear members disposed within the chamber, forming expanding and contracting fluid pockets between the teeth thereof and various fluid ports and passages for directing fluid, under relatively high pressure, through the housing and to and from the respective fluid pockets in synchronism with the relative movement of the gear members, and a work input-output shaft being connected by a wobble shaft, to one of the gear members for joint rotation with successive gear members, whereby the input-output shaft is subjected to operating forces tending to impart eccentric movement thereto, a fluid sealing structure being disposed at the input-output shaft and comprising a relatively resilient sealing ring, subjected at one side thereof to the relatively high fluid pressure in said chamber, with such sealing ring being backed at the low pressure side by a pair of cooperable members, one of which has a relatively minimum clearance with respect to the adjacent portion of the housing whereby said resilient sealing ring is operatively backed at the low pressure side thereof substantially through its radial area.

3,785,662

ICE SKATES

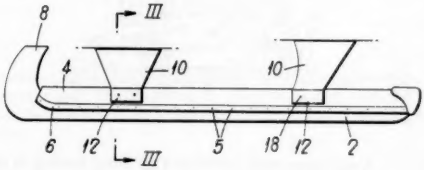
John Staples, Buckinghamshire, England, assignor to Mitchell & King Skates Limited, Slough, Buckinghamshire, England

Filed Apr. 24, 1972, Ser. No. 247,159

Claims priority, application Great Britain, Apr. 26, 1971, 1,1439/71

Int. Cl. A63c *1/38*

U.S. Cl. 280—11.17 **2 Claims**



In an ice-skate of the kind having a longitudinally-extending tubular reinforcing member for the blade, and a pair of cup-shaped support members extending from the tube to a bed-support-plate and a sole-support-plate for a skate boot, lugs are formed on the upper edge of the blade, which lugs extend upwardly inside the tube to abut its inner surface, so as to transmit compressive loadings from the support members to the blade.

3,785,663

BRAKING DEVICE FOR A SKI

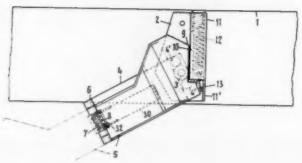
Reinhold Spieldiener, Vorhaldenstrase 95, CH-8045 Zurich; Alphons Saiko, Weinbergstrasse 54, CH-8802 Kilchberg, and Robert Spieldiener, Trottenstrasse 95, CH-8037 Zurich, all of Switzerland

Filed Apr. 20, 1972, Ser. No. 245,746

Claims priority, application Switzerland, Apr. 23, 1971, 5919/71

Int. Cl. A63c 7/10

U.S. Cl. 280—11.13 B 10 Claims



A braking device for a ski to stop its eventual escaping, comprising a braking unit adapted to be moved, due to an unexpected separation of ski and ski-boot, from a resting position flush with the ski trunk into a braking position by spring action, in which position a member of the braking unit projects beyond the sliding surface of the ski trunk in a transverse direction thereto, the braking unit being releasably held in resting position by a disengageable release element preventing the spring action only in engaged position and being disengageable by the separation of ski and ski-boot.

3,785,664

HEEL SUPPORTING DEVICE OF A SKI SAFETY BINDING

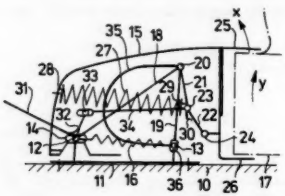
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Grestch & Co. G.m.b.H., Leonberg near Stuttgart, Germany

Filed Jan. 13, 1972, Ser. No. 217,556

Claims priority, application Germany, Jan. 16, 1971, P 21 01 973.8

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T 16 Claims



A heel supporting device of a ski safety binding of the type as disclosed in the U.S. Pat. No. 3,529,846, in which in addition to the heel depressing spring further spring means are provided which during normal skiing permit the heel of the ski boot to be slightly lifted off the ski against their spring action without, however, causing the binding to be released from the boot. These additional spring means preferably consist of at least one bow-shaped spring element which is interposed between the ski and the heel and is in parallel connection with a bracing member which limits the stroke of the additional spring element.

3,785,665

SKI FOR SNOW VEHICLE

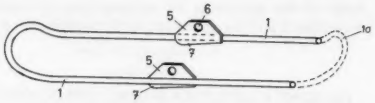
Markku Merenheimo, Oulu, and Mauno Ruuska, Muhos, both of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,187

Claims priority, application Finland, Jan. 26, 1972, 201/72

Int. Cl. B62b 17/02

U.S. Cl. 280—28 4 Claims



A snowmobile ski having an elongated tubular section bent into U- or O-shape with an end portion bent upwardly to form a gripping loop, and a support plate fixedly mounted on the elongated tubular section so that the elongated tubular section constitutes on hard snow or ice an exclusive sliding surface of the snowmobile ski.

3,785,666

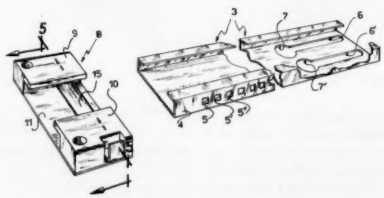
DEVICE FOR CHANGING THE LONGITUDINAL POSITION OF A SKI BINDING

Georges Pierre, and Joseph Salomon, both of 34, Avenue de Loverchy, Annecy, France

Filed Feb. 2, 1972, Ser. No. 222,914

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T 8 Claims



A device making it possible to change the longitudinal position of a binding on a ski rapidly; the device includes a clamp and slide arrangement permitting longitudinal displacement and two profiles engaging with each other under the action of a spring exerting a thrust transversely relative to the ski.

3,785,667

TOE-HOLDING DEVICE FOR SAFETY SKI BINDING

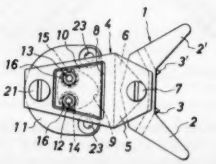
Yoichi Nagasaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed May 18, 1972, Ser. No. 254,366

Claims priority, application Japan, July 19, 1971, 46/63651

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T 10 Claims



A toe-holding device for a safety ski binding comprising a toe-holder body laterally rotatably supported on a stationary member and having an aperture, the body being urgedly

locked, at one point, to the stationary member with a given biasing force. A pair of vertical shafts is extended through the aperture so that they can contact with the body, and is positioned symmetrically relative to the urgedly locked point of the body. The aperture has a space enough to permit the body to be rotated about the pair of shafts respectively.

In a normal ski-operative condition, the body is prevented from its rotation by the contact of the shafts with the body and the biasing force acting on said one point of the body. When a force exceeding the given biasing force is applied to the body to tend to rotate it, the body is allowed to rotate in either lateral direction about either of the shafts.

3,785,668

SAFETY SKI BINDING SYSTEM

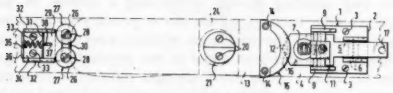
Hannes Marker, Garmisch-Partenkirchen, Hauptstrabe, Germany

Filed May 11, 1971, Ser. No. 142,144

Claims priority, application Germany, May 12, 1970, P 20 23 269.0; Nov. 11, 1970, P 20 55 499.8

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 R **9 Claims**



A safety ski binding comprise a heel-holding device and an abutment mounted on the ski as well as the sole of the skiing boot. The heel-holding device normally forces the sole of the boot against the abutment and in response to a vertically and/or horizontally directed overload releases the skiing boot. The abutment consists of a disc, which is secured to the ski to be at least approximately coaxial to the tibia and when the skiing boot is applied extends into a corresponding recess in the sole of the boot.

3,785,669

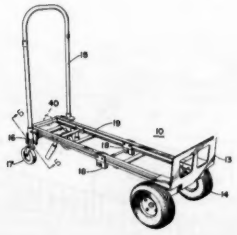
CONVERTIBLE BULK HAND TRUCK

William Michael Doheny, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Aug. 28, 1972, Ser. No. 284,329

Int. Cl. B62b *3/04*

U.S. Cl. 280—47.18 **10 Claims**



A convertible bulk hand truck is described which is capable of being adjustably positioned by virtue of a unique foldable adjustable linkage between folded and unfolded positions to define either a two wheeled dolly device or a four wheeled platform cart. The hand truck is lightweight, yet strong and rigid for dependable performance in hard, everyday service, has excellent load stability and is capable of transporting stacked products around manufacturing and sales points with maximum ease.

3,785,670

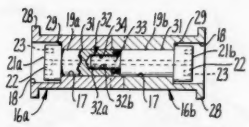
SECURITY COUPLING

Robert M. Smith, 15 Oceanside Dr., Daly City, Calif.

Filed July 29, 1971, Ser. No. 167,145

Int. Cl. B60b *35/14*

U.S. Cl. 280—79.1 **11 Claims**



A security coupling is mounted in the wheel of a shopping cart. A pair of wheel retainers are secured together to prevent removal of the wheel from the frame of a shopping cart and include a pair of mating threaded connectors having enlarged heads carried in counterbores in the outer ends of the retainers such that only the outer faces of the connectors are accessible. To unscrew the connectors and disconnect the wheel from the frame a special wrench is provided having spaced tines which fit in corresponding lug sockets diametrically spaced across the ends of the connector heads. The connectors are releasably locked against rotation in the retainers by a spring key or spline. The key is sinuous shaped and in operative position is biased to project into confronting keyways on the connectors and retainers. One of the wrench tines is elongated to extend into the keyway and engage the slope of the spring key to retract it from its operative position so the connectors may be unscrewed with the wrench.

3,785,671

SAFETY BRACKET FOR A MOTOR CAR

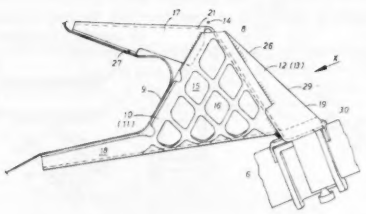
Gert Salewsky, Lenting, Germany, assignor to Audi Nsu Auto Union A.G., Ingolstadt, Germany

Filed Dec. 29, 1971, Ser. No. 213,408

Claims priority, application Germany, Feb. 13, 1971, P 21 06 963.6

Int. Cl. B62d *1/18*

U.S. Cl. 280—87 R **6 Claims**



A bracket is used for carrying a body pipe for a safe steering of a motor car. The invention is characterized in that the bracket is composed of a carrying member and a shaping member.

3,785,672

VEHICLE SUSPENSION SYSTEM

Horacio Shakespear, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

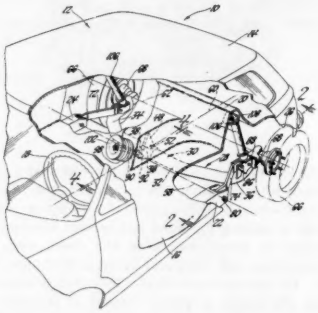
Filed June 19, 1972, Ser. No. 263,964

Int. Cl. B60g *9/02*

U.S. Cl. 280—112 A **5 Claims**

A suspension system particularly adapted for the rear of automobile type vehicles and incorporating roll steer with inde-

pendent ride rate and roll stiffness, the suspension system including a solid axle centrally connected to the body for pivotal movement about a longitudinal roll axis and a transverse deflection axis, a pair of longitudinal control arms disposed between the body and the axle to control the path of motion of the axle about either of the two axes, and a coil spring



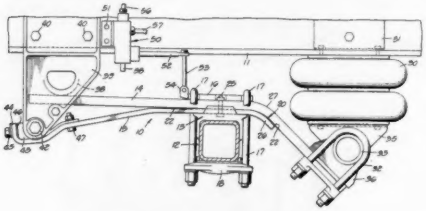
mounted on the body in the longitudinal plane of symmetry and connected to the axle at the center thereof through a bell-crank and connecting link, pivotal movement of the axle about the deflection axis corresponding to jounce deflection of the wheels being resisted by the spring and pivotal movement about the roll axis having no substantial effect on the spring so that the latter does not contribute to roll stiffness.

3,785,673

PRELOADED SPRING BEAM AND METHOD EMPLOYED ALONE OR IN COMBINATION WITH AIR BELLOWS SPRING

Henry C. Harbers, Jr., Huntington Beach, and Henry C. Harbers, Sr., Pasadena, both of Calif., assignors to Western Unit Corporation, City of Industry, Calif.

Filed Sept. 20, 1971, Ser. No. 182,014
Int. Cl. B60g *11/28*
U.S. Cl. 280—124 F **26 Claims**



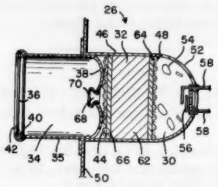
A preloaded spring beam having a short portion of its length held resiliently deformed in a manner to increase its load sustaining capabilities substantially. In one typical application the spring beam is employed in a vehicle suspension assembly, either alone or in combination with other spring means, such as regulatable air bellows spring means. The spring beam typically comprises a single spring leaf of the single or double cantilever type and preloaded in an area immediately opposite its anchorage to its fixed support utilizing a specially constructed high strength preloading device or shim between the beam and support effective to store high value preloading stresses in the beam as an incident to the clamping thereof to its support. When used in combination with a regulatable air spring, the suspension assembly provides a soft ride under both dead load and under wide range live loading conditions and, in addition, assures superior sway and stabilizing control of the associated carriage unit.

3,785,674

CRASH RESTRAINT NITROGEN GENERATING INFLATION SYSTEM

Donald R. Poole, Woodinville; Peter L. Stang, Bellevue, and James E. Mars, Vashon, all of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed June 14, 1971, Ser. No. 152,899
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **42 Claims**



A crash restraint system for an automobile comprising an inflatable bag mounted forward of the automobile passenger seat. A bag inflating device comprising a cluster of gas generating units, each of which has a primary combustion chamber to produce the driving gas mixture, a secondary reaction chamber to react with some of the products of the gas mixture to remove them from the gas mixture, and a gas generating coolant chamber which generates additional gas by vaporization and produces a cooler gas mixture to inflate the bag.

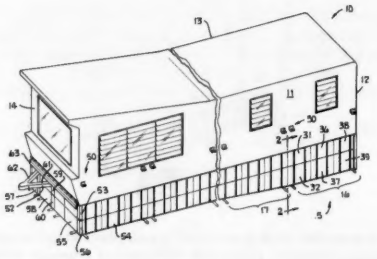
In the combustion chamber is a composition made up of an azide (e.g. sodium azide) and an oxidizer (e.g. potassium perchlorate), which upon ignition produces free nitrogen and other combustion products, such as sodium oxide, free sodium and potassium chloride. In the secondary reaction chamber is a porous composition (e.g. copper oxide and carbon) that reacts with the free sodium and sodium oxide and permits the free nitrogen to pass through to the coolant chamber. The coolant chamber contains a liquid halocarbon (e.g. Freon) which atomizes and vaporizes with the nitrogen to form an inflating gas for the bag.

3,785,675

MOBILE HOME SKIRTING

George F. Norris, 1920 Kiowa Dr., Lafayette, Ind., and Gerald K. Robbins, 101 S. 31st St., Lafayette, Ind.

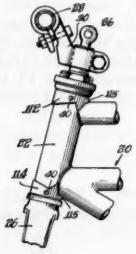
Filed Mar. 20, 1972, Ser. No. 236,309
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **5 Claims**



Skirting for attachment to a mobile home. The skirting includes a plurality of skirt assemblies each pivotally connected to the bottom edge of the trailer so as to be swingable outward and upwardly to a stored position. Each skirt assembly in-

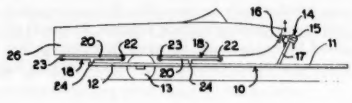
cludes a pair of telescopically constructed vertical posts having cross bars connected thereto. The lower cross bar is telescopic so as to maintain parallelism between the posts even though they are extended to different lengths. Panels are mounted to the cross bars by means of clips. The panels are connected together by interlocking slides.

3,785,676
BICYCLE STEM LOCK
Frank F. Klein, Jr., 2049 W. 63rd St., Chicago, Ill.
Division of Ser. No. 771,080, Oct. 28, 1968, Pat. No. 3,660,995, which is a continuation-in-part of Ser. No. 618,004, Feb. 23, 1967, abandoned. This application Apr. 26, 1971, Ser. No. 137,692
Int. Cl. B62k *19/32*
U.S. Cl. 280—279 **5 Claims**



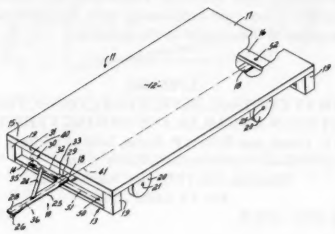
A bicycle fork stem lock installed either at the time of manufacture of a bicycle or subsequently, the lock including a slide bolt projecting from the fork stem into the upper bearing cup and preferably also into the head frame, the bicycle fork stem and upper head bearing cup being of standard size.

3,785,677
BOAT SUPPORT FOR TRAILERS
Oscar C. Calkins, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.
Filed Jan. 3, 1972, Ser. No. 214,713
Int. Cl. B60p *3/10*
U.S. Cl. 280—414 R **11 Claims**



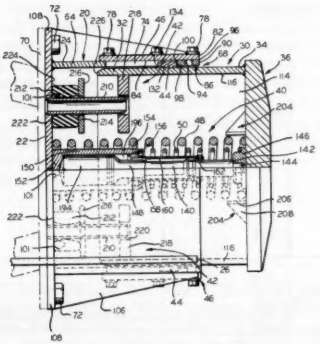
A boat support designed to accommodate changes in the load distribution on a boat trailer. Self-balancing hull support roller assemblies are combined on a supporting framework together with a bow securing assembly. Limited movement is provided on the framework between the bow securing assembly and the hull supporting assembly to permit self-balancing of the hull supporting assembly independently of the bow securing assembly. Such movement can be provided by a limited pivotal connection between the trailer framework and tongue of the trailer, by walking beam supports for multiple hull supporting assemblies or by an arrangement which allows limited elevational movement of the bow securing assembly relative to the trailer framework.

3,785,678
COUPLER DEVICE FOR A CART
John Marshal Shearer, Loveland, Ohio, assignor to Leyman Manufacturing Corporation, Cincinnati, Ohio
Filed Sept. 29, 1972, Ser. No. 293,327
Int. Cl. B60d *1/02*
U.S. Cl. 280—491 B **3 Claims**



The coupler device includes a hitch bar that is movable between an extended position where same is aligned with the centerline of the cart, and a retracted position where same is skewed relative to the centerline of the cart. A hitch pin is mounted to and depends from each end of the bar. When in the extended position the front hitch pin is adapted to interconnect with a forward cart in a coupling attitude, and the rear hitch pin locks the hitch bar to the cart. When in the retracted position the front hitch pin locks the hitch bar in a storage attitude where the coupler is totally recessed beyond the leading edge of the cart. The coupler device also includes a pivot arm fixed to the hitch bar at one end and pivotally connected to the cart's frame at the other end, the pivot point being substantially removed from the cart's centerline but closely adjacent the cart's leading edge. Thus, the hitch bar may be pivoted between the extended and retracted positions about the pivot point while remaining attached to the cart at all times.

3,785,679
CUSHIONED BUMPER FOR SCRAPERS
Bertil E. Peterson, South Holland, and Richard J. Housman, Dolton, both of Ill., assignors to Cardwell Westinghouse Company, Chicago, Ill.
Filed Apr. 10, 1972, Ser. No. 242,329
Int. Cl. B60r *19/08;* **B60d** *3/00*
U.S. Cl. 280—481 **7 Claims**



A cushioned bumper for ground scrapers comprising a housing adapted to be mounted on the rear end of the scraper

in a generally horizontal position and extending longitudinally of the scraper, a tubular plunger structure reciprocably mounted in the housing and carrying a buffer plate exposed exteriorly of the housing against which the blade of a bulldozer or the like will engage to push the scraper when stuck, and a composite cushioning arrangement interposed between the housing and the plunger including a pressure responsive variable orifice type hydraulic cushioning unit and one or more resilient pad type cushioning units for cushioning the forces applied to the scraper by the bulldozer.

3,785,680

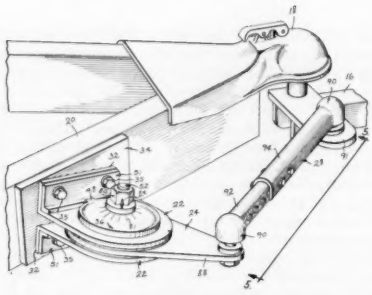
SWAY CONTROL DEVICE FOR CONNECTION BETWEEN A TRAILER AND TOWING VEHICLES

Arthur L. Good, and Robert P. Reese, both of Elkhart, Ind., assignors to Reese Products, Inc., Elkhart, Ind.

Filed Jan. 26, 1973, Ser. No. 327,081

Int. Cl. B60d *1/00*

U.S. Cl. 280—446 B **10 Claims**



A control device usable for reducing sway between a trailer and towing vehicle. The control device includes a friction disk disposed between a bracket connected to one of the trailer and towing vehicle and a pivot arm connected to the other of the trailer and towing vehicle. The disk is compressed between the bracket and arm by means of an adjustable securement part.

3,785,681

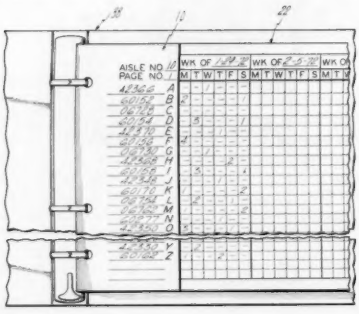
INVENTORY CONTROL APPARATUS AND METHOD

Edward C. Jackowitz, 78 Lanning St., Southington, Conn.

Filed Feb. 8, 1972, Ser. No. 224,500

Int. Cl. B42d *15/00*

U.S. Cl. 283—55 **4 Claims**



An inventory control apparatus and method are presented wherein letter identification tags, letter conversion cards, and order sheets are employed to form a simple and easy to use system. Letter identification tags are placed on store shelves, with each letter being associated with a particular inventory item. Master letter conversion cards have letter designations keyed to the letter designation on the shelves along with word or other code designations for the particular inventory items. The letter conversion cards and disposable order sheets are retained in a binder and inventory control is maintained simply by a clerk making appropriate quantity notations on the order sheet at locations opposite to letter designations of items to be restocked.

3,785,682

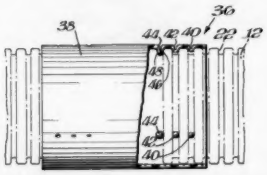
FLEXIBLE FITTINGS FOR CORRUGATED TUBING

Willard W. Schaller, Maumee, Ohio; Ronald C. Martin, Newark, Del., and Marty E. Sixt, Napoleon, Ohio, assignors to Advanced Drainage Systems, Inc., Newark, Del.

Continuation of Ser. No. 809,117, March 21, 1969, abandoned. This application Nov. 17, 1970, Ser. No. 90,486

Int. Cl. F16l *35/00*

U.S. Cl. 285—24 **4 Claims**



Flexible coupling for interconnecting ends of corrugated tubing comprises straight-walled tubular body section having substantially uniform thickness throughout. Each of plurality of locking lugs formed in tubular body section at one end thereof projects into interior of tubular body section and has guiding surface portion across which corrugated tubing slides when tubing is inserted into tubular body section for connection thereto. Locking lugs have abutment surface portions adjacent guiding surface portions for preventing removal of corrugated tubing from tubular body section. Each locking lug is positioned between adjacent pair of corrugations in tubing inserted into tubular body section after first corrugation of adjacent pair clears guiding surface portion. Removal of tubing is prevented by engagement between first corrugation of adjacent pair and abutment surface portions of locking lugs.

3,785,683

CONNECTING DEVICE FOR A CATHETER

Ter Je Roj Enok Adelhed, Jakobsberg, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 26, 1972, Ser. No. 220,843

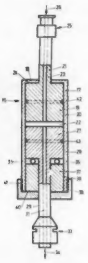
Claims priority, application Sweden, Feb. 1, 1971, 1186/71

Int. Cl. A61m *5/00*; **F16l** *27/00*

U.S. Cl. 285—169 **1 Claim**

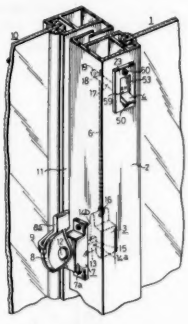
A device for connecting a catheter with a container for contrast medium which is subjected to pressure is characterized by coupling means which are liquid-tightly connected with

each other, at least one of these means being mounted so as to be rotated relatively to the other means about the flow axis.



These means can be removably connected by connecting elements with the container for the contrast medium on the one hand and with the catheter on the other hand.

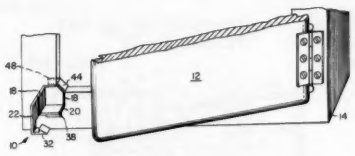
3,785,684
DOOR LOCKING MECHANISM
Yoshitaka Nakanishi, 12-9, 5-chome, Yawata, Ichikawa-shi, Japan
Filed May 24, 1971, Ser. No. 146,346
Claims priority, application Japan, May 23, 1970, 45/50039
Int. Cl. E05c *3/04*
U.S. Cl. 292—241 **1 Claim**



A door locking device comprising a cam latch released by a lock piece that can slide vertically in a vertical frame of a door. An actuating means is provided in the frame and slides the lock piece vertically, and a flexible and slackenable line connects the actuating means and the lock piece.

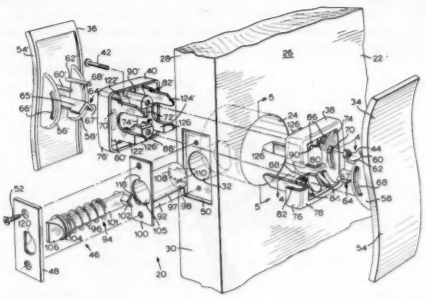
3,785,685
CABINET DOOR RESTRAINT
Francis X. MacDonald, Canton, and Paul M. MacDonald, North Abington, both of Mass., assignors to P. X. Industries, Inc., Rockland, Mass.
Filed July 21, 1972, Ser. No. 274,047
Int. Cl. E05c *19/18*
U.S. Cl. 292—288 **4 Claims**

A disposable device is provided to serve as a combination door lock, gauge and support for use in the assembly and shipping of cabinets. The device is of a semi-boxed configuration having a leg mountable at one corner of the door opening opposite the hinged side thereof. One wall of the device is articulated and latches with another wall whereby when the door of the cabinet is closed, the articulated wall is snapped into a latched position over the outside corner of the door,



locking it in place. The leg may be temporarily stapled to the cabinet or may have an extension which hooks around the inside face of the cabinet.

3,785,686
DOOR LATCH
Richard James Armstrong, Toronto, Ontario, Canada, assignor to Decalock Limted, Toronto, Ontario, Canada
Filed May 5, 1972, Ser. No. 250,728
Int. Cl. E05b *3/00*
U.S. Cl. 292—336.3 **18 Claims**

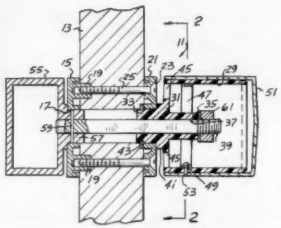


A door latch having interchangeable handles for attachment to a suitably prepared door by a pair of interchangeable handle mounting elements. A latch bolt is also adapted for positioning in the door in engagement with cam ends of the handles so that movement at the handles results in movement of a slider in the latch bolt for opening the door. Each handle is pivotally coupled to a corresponding element by a combination of curved ribs and grooves and a resilient finger on the handle rides on a stress-limiting ramp formed in the element to bias the handle into a normal position.

3,785,687
TWO-PIECE DOOR KNOB CONSTRUCTION
Leon Yulkowski, Pontiac, Mich., assignor to General Lock Company, Detroit, Mich.
Filed May 26, 1972, Ser. No. 257,196
Int. Cl. E05c *1/00*
U.S. Cl. 292—347 **1 Claim**

A door knob assembly which includes an inner molded

plastic cup-shaped base having an integral internal and external hub axially apertured to receive a spindle; and an outer metallic hub snugly assembled over said base and interlocked therewith.

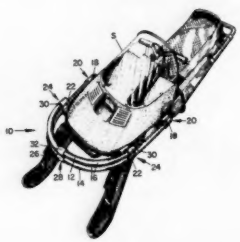


3,785,688

VEHICLE BUMPER

Louis F. Sibley, Ware, Mass., assignor to Gillespie Corp., Ware, Mass., a part interest

Filed Aug. 18, 1972, Ser. No. 281,832
Int. Cl. B60r 19/08; B61f 19/04; B62m 27/00
U.S. Cl. 293—62 2 Claims



A resilient bumper for a vehicle such as a snow mobile, wherein a pair of superposed coil springs is disposed at the forward end of the vehicle, each spring being wrapped with a high-impact plastic covering, the lower spring extending forwardly from the forward end of the vehicle and along the sides of the vehicle, and the upper spring extending forwardly from the vehicle, spaced end brackets being fixed to the sides of the vehicle to which the ends of the springs are anchored, with certain of the brackets being common to both springs, wherefore the springs function unisonly.

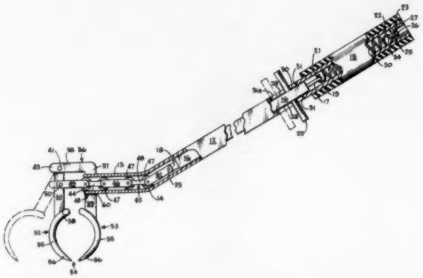
3,785,689

LITTER GRABBLER AND HANDLING IMPLEMENT

Marcello M. Tanksley, 5700 Highland Ave., St. Louis, Mo.

Filed Feb. 22, 1973, Ser. No. 335,037
Int. Cl. A47l 13/06
U.S. Cl. 294—19 R 4 Claims

An implement for use in facilitating a Grounds-Keeper's chore, in the matter of collecting, handling and disposing of such litter, as a discarded palatable drink can, bottle, or scrap paper selectively, which may be strewn upon the surface of the ground, in a manner which precludes substantially the bending, stooping or touching the litter as normally would be required of the cited person.

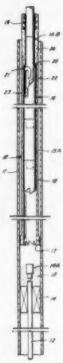


3,785,690

TOOL FOR USE IN REMOVING A FISH STUCK WITHIN A WELL BORE

Carl P. Hutchinson, Houma, La., assignor to Wilson Industries, Inc., Houston, Tex.

Filed May 5, 1972, Ser. No. 250,593
Int. Cl. E21b 31/02
U.S. Cl. 294—86.34 6 Claims



There is disclosed a tool in which a tubular body having a means on its lower end for connection to a fish stuck within the bore is adapted to be connected to a running string for suspension in a well bore, and a washpipe having a cutting surface on its lower end is supported by the tubular body for raising and lowering therewith.

3,785,691

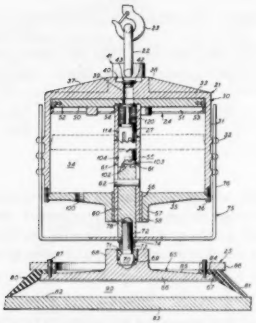
AUTOMATIC LIFTING DEVICE

Gene Sperry, Salem, Ill., assignor to American Chain & Cable Co., Inc., Bridgeport, Conn.

Filed Aug. 7, 1972, Ser. No. 278,568
Int. Cl. B66c 1/02
U.S. Cl. 294—64 R 3 Claims

A vacuum actuated lifting attachment for a hoist or crane in which the functions of gripping and releasing of generally flat-

surfaced objects are accomplished by means of vacuum and atmospheric pressure applied to the flat surface of the object in response to relative movement between the lifting at-



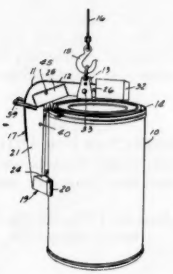
tachment and object, to cause sequential operation of valve means controlling the evacuation and venting of a vacuum chamber communicating with an elastomeric suction cup for gripping the object.

3,785,692

DRUM LIFTING ATTACHMENT

John F. E. Ericson, Seminole, Fla., assignor to Marvel Industries, Inc., Evanston, Ill.

Filed Mar. 20, 1972, Ser. No. 235,949
Int. Cl. B66c *1/42*
U.S. Cl. 294—90 **1 Claim**



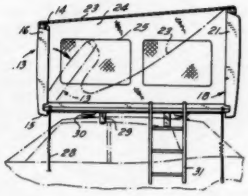
Clamping attachment adapting drums to be lifted by a hoist and the like. The attachment is in the form of an inverted L-shaped frame, having a horizontal leg extending over the top of the drum and a vertical leg extending downwardly along the side of the drum. A cradle at the lower end of the vertical leg is adapted to engage the drum at circumferentially spaced points. A clevis on the horizontal leg adapts the frame for lifting by a hoist, while a counterweight on the outer end of the horizontal leg counterbalances the frame when moved into engagement with the drum. The frame contains cooperating lower and upper clamping jaws recessed in the vertical leg adjacent the top of the leg and guided manually to engage the lower jaw beneath the bead of the drum and the upper jaw within the bead of the drum and grippingly engage the bead of the drum as the attachment is raised.

3,785,693

PORTABLE SLEEPING COMPARTMENT

James F. Fulton, Mamaroneck, N.Y., and Joseph A. Rinaldi, Oradell, N.J., assignors to Fulton & Partners, Inc., New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,428
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **4 Claims**



A portable sleeping compartment is foldable into an open and closed position and forms a compact weatherproof container. In one embodiment the compartment is removably mounted on the top of a car, and in another larger embodiment the compartment is mounted on a trailer and towed behind the car. The compartment advantageously has front and rear panels readily pivoted about a hinge on a floor panel. The three panels have a highly desirable shell configuration to enhance the formation of the enclosure.

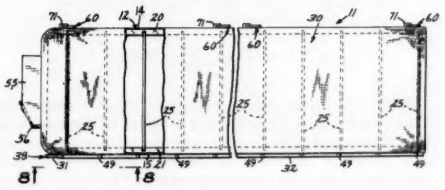
A flexible weatherproof cover is secured at the top of both the front and rear panels and conveniently folds into place when the front and rear panels are moved to the upright or open position.

3,785,694

FLEXIBLE COVER ASSEMBLY

Robert J. Sargent, St. Paul, Minn., assignor to Retsel Inc., Pension Fund, St. Paul, Minn.

Filed Dec. 13, 1971, Ser. No. 207,202
Int. Cl. B60j *11/00*
U.S. Cl. 296—98 **2 Claims**



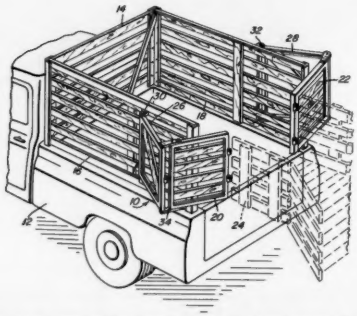
A flexible cover assembly is disclosed for use with an open-topped semi-trailer. The assembly includes means for rolling the flexible cover into a generally cylindrical roll over the top of the semi-trailer to a position adjacent one side thereof and means for storing the flexible cover in the rolled position with the flexible cover extending past the side of the trailer thus allowing the bows extending transversely across the semi-trailer to be removed providing a loading area through the open top of the semi-trailer.

3,785,695

TAILGATE ASSEMBLY

Ellsworth V. Conkle, Paonia, Colo., assignor to James A. Stratman, Cedaredge and Fred P. Morgan, Delta, both of Colo.

Filed Apr. 27, 1972, Ser. No. 248,081
Int. Cl. B60j 5/12
U.S. Cl. 296—50 7 Claims



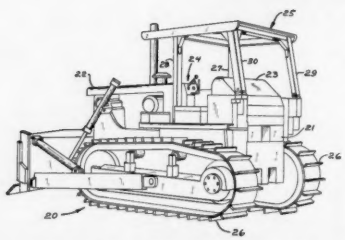
A tailgate assembly for use with rear-loading vehicles, said assembly comprising a pair of doors hingedly connected to a pair of support frames, each support frame being pivotally mounted to one of the carrying compartment side walls to permit composite transverse, pivotal movement of the doors by pivoting the support frames to achieve the desired door opening width for the convenient loading at a ramp, livestock chute, or the like.

3,785,696

ROLLOVER PROTECTIVE SYSTEMS FOR CONSTRUCTION VEHICLES

James C. Moore, Clackamas, and Milton K. Leonard, Lake Oswego, both of Oreg., assignors to Portland Wire & Iron Works, Portland, Oreg.

Filed Nov. 19, 1971, Ser. No. 200,302
Int. Cl. B60j 7/24
U.S. Cl. 296—102 7 Claims



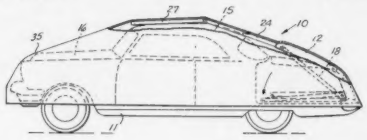
Protection against injury to an operator of a construction vehicle in the event of rollover is provided by a system which may be adapted to many different types of construction vehicles, yet which will withstand the static tests accepted as the industry standard for simulating rollover. The system includes an integral superstructure including upright corner column members joined at their upper ends by longitudinal and transverse horizontal members. At each upper corner of the superstructure there is a special gusset member interconnecting the three coincident superstructure members. The gusset members effect a smooth transition of stress applied to one member to the other members of the superstructure with minimum deflection. The bases of the superstructure upright columns are anchored by means of vibration mounts to brackets which are attached to the vehicle frame.

3,785,697

PORTABLE COLLAPSIBLE GARAGE

Robert Dabbs, 717 Clarissa St., Pittsburgh, Pa.

Filed Nov. 16, 1972, Ser. No. 307,245
Int. Cl. B60j 11/00
U.S. Cl. 296—136 5 Claims



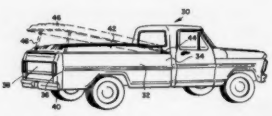
A portable collapsible garage which includes a flexible waterproof cover mounted on a framework which is foldable into the trunk of the motor vehicle with the framework carrying a reel on which the cover is wound prior to storing.

3,785,698

COVER TOP FOR PICKUP TRUCK BEDS

William H. Dean, Phoenix, Ariz., and Richard W. Henes, 5901 E. Calle Del Sud, Phoenix, Ariz., assignors to said Henes, by said Dean

Filed July 13, 1971, Ser. No. 162,149
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 10 Claims



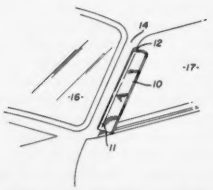
A cover for pickup truck beds, said cover releasably hinged on a horizontal axis to the forward end of a pickup truck bed; and an inverted U-shaped stand pivoted to a rearward portion of said cover and having legs with bearing means slidably operable in tracks secured in generally horizontal disposition at opposite inner sides of said pickup truck bed.

3,785,699

WIND DEFLECTOR FOR AUTOMOBILES

Charles E. Molaskey, 11408 Youngstown-Pittsburgh Rd., New Middletown, Ohio, and Charles O. Starkey, R.D. 1, Edinburg, Pa.

Filed June 26, 1972, Ser. No. 266,287
Int. Cl. B60j 1/20
U.S. Cl. 296—152 2 Claims



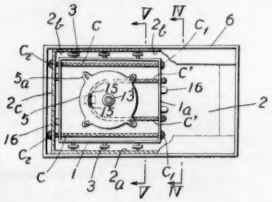
A wind deflector for automobiles comprises an elongated cross sectionally arcuate member having a longitudinally extending flange along one edge thereof and offset with respect thereto the flange having a plurality of notches cut therein

whereby the flange may be positioned between the window frame member and a trim and/or sealing piece thereon so as to mount the wind deflector thereto at the forward edge of the window opening.

3,785,700
CHAIR

Shirohei Kubo, Tokyo, Japan, assignor to Kabushiki-Kaisha Kubo Shoten, Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,256
Claims priority, application Japan, Mar. 26, 1971, 46/17772
Int. Cl. B60n *1/02*; **F16m** *13/00*
U.S. Cl. 297—349 **2 Claims**

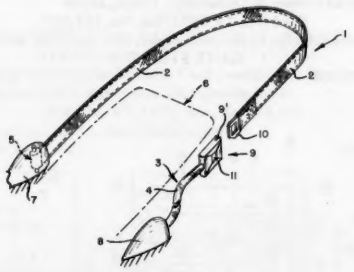


A chair seat which is connected to a support leg through connecting means and free to be moved backwardly and rotated about said support leg and designed for automatic restoration to its former position, which is characterized in that an elongated resilient means acting linearly between the seat and the connecting means operates to control the backward movement of the seat and another elongated resilient means which is adapted to act angularly between the connecting means and the support leg operates to control the rotation of the seat.

3,785,701
SAFETY BELT SYSTEM

William J. Gilmore, Manitou Beach, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,685
Int. Cl. A62b *35/60*
U.S. Cl. 297—385 **6 Claims**

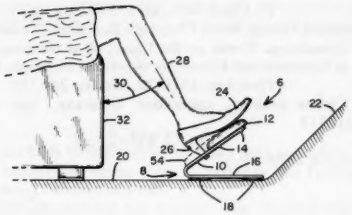


A safety belt system using a bendable cable section having a self-sustaining shape and a flexible strap section. The cable section is fixed on one side of the seat for positioning at the side of the occupant of the seat. The flexible strap section is fixed at the other side of the seat for extending across the seat and the occupant. Fastening means connected to the free ends of the cable and belt are provided for attaching the end of the belt to the cable at the one side of the occupant.

3,785,702
FOOT REST

Arnold Buehring, P.O. Box 5, Bridger, Mont.

Filed May 17, 1971, Ser. No. 144,088
Int. Cl. A47c *9/12*
U.S. Cl. 297—439 **1 Claim**

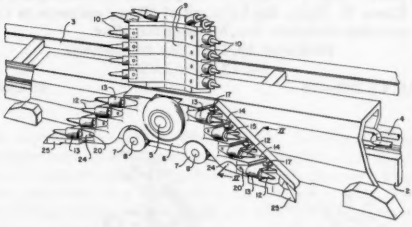


A support for resting the feet comprising a V-shaped bracket of unitary construction, one leg of said bracket including a non-slip surface for resting on a floor surface and the other leg having a foot rest element attached thereto. In the preferred embodiment, said bracket comprises first and second spaced apart, resilient, V-shaped members, preferably constructed of spring steel, a foot rest element attached to a first leg of each of said spaced apart members and non-slip surfaces attached to each of the other leg members to prevent the support from slipping on the surface on which it is sitting. In the embodiment designed for supporting feet encased in footwear having high heels, the foot rest element extends only partially along said first legs beginning at the outer end thereof whereby when the ball of the foot is resting thereon, the heel of the shoe is held clear of the floor surface on which the device is resting thereby preventing said heels from resting on said floor surface and enabling the wearer thereof to sit comfortably without any undue stress being applied to said heels.

3,785,703
COAL PLOW WITH INDIVIDUALLY PIVOTED BLADES

Pal Frenyo; Karl-Heinz Hafer; Reimund Karkutt, all of Bochum; Willi Gormann, Wanne-Eickel, and Walter Pelka, Gelsenkirchen, all of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengresserei mbH, Bochum, Germany

Filed Jan. 31, 1972, Ser. No. 222,076
Claims priority, application Germany, Mar. 19, 1971, 7,110,531
Int. Cl. E21c *35/12*
U.S. Cl. 299—34 **5 Claims**



A coal plow that can be moved lengthwise in opposite directions along a coal face has an axle projecting horizontally from its mining side. A tool supporting member is mounted on the axle for rocking parallel to the guide beam of the plow. At each end of the supporting member there is a plurality of independent blade holders disposed in a row extending upwardly beside the beam. The lowest blade holder in each row supports a bottom plow blade for engagement with the foot wall

of the mine. Cutter blades have inner ends secured to the rest of the holders and have outer ends projecting toward the adjacent ends of the guide beam. Each of these holders is hinged to the supporting member on a substantially vertical axis so that the outer ends of the blades can swing laterally away from the guide beam.

3,785,704

PLANER MINING INSTALLATION

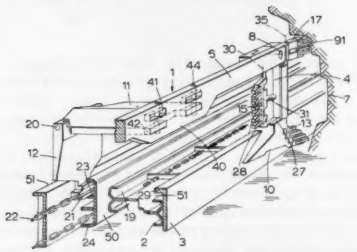
Berthold Ostrop, Selm; Christoph Rassmann, Lunen, and Alois Hauschopp, Werne an der Lippe, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Apr. 14, 1972, Ser. No. 244,168

Claims priority, application Germany, Apr. 17, 1971, 2118713

Int. Cl. E21c *27/35*

U.S. Cl. 299—34 **21 Claims**



A mineral mining installation composed of a plough movable along a multi-section conveyor. The plough is constructed from an elongate beam supported in parallelism with and above the mineral face side of the conveyor. The beam is supported at its ends by means of a combination of rigid columns and cutter bit carriers pivotably attached to the beam. The cutter bit carriers engage a guide rail at the mineral face side of the conveyor and the columns are in turn supported on the carriers. The beam and carriers form a parallelogram-type linkage with the guide rail and the carriers pivot to a limited extent as the plough is moved along the conveyor. A further support means extends from the beam over the conveyor and is guided at the goaf side of the conveyor where a drive chain is provided. Sets of cutter bits are attached to the columns and the beam as well as to the cutter bit carriers.

3,785,705

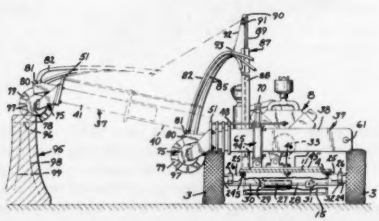
CONCRETE MEDIAN AND CURB SAWING MACHINE

Wynn S. Binger; Leonard L. Shope, both of Minneapolis, and Glenn W. Moey, Big Lake, all of Minn., assignors to Construction Materials, Inc., Minneapolis, Minn.

Filed Sept. 20, 1972, Ser. No. 290,632

Int. Cl. E01c *23/09*

U.S. Cl. 299—75 **10 Claims**



A mobile frame mounting an extensible and retractable boom for generally upward and downward swinging movements and having a rotary saw or cutter element at its outer end for cutting grooves in concrete highway median strips or curbs transversely of the longitudinal dimension of the median strips or curbs. The boom is further movable between its operative position transversely of the direction of travel of the mobile frame and a storage position generally longitudinally of the direction of frame travel.

3,785,706

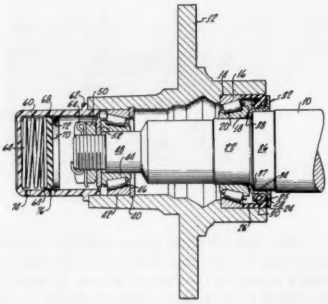
PRESSURIZED HUB CAP FOR VEHICLE WHEEL

Dan P. Vangalis, 25402 Westborne, Dana Point, Calif.

Filed Mar. 6, 1972, Ser. No. 232,001

Int. Cl. B60b *5/02*

U.S. Cl. 301—108 A **4 Claims**



There is disclosed herein a pressurized hub cap for vehicle wheels, particularly for boat trailers the wheel hubs of which are subjected to immersion in water in the launching and retrieval of boats. The hub cap is of transparent plastic, is closed at the outer end and contains a spring-backed piston for applying pressure on lubricant grease in the hub cap and for yielding upon the occurrence of expansion of the lubricant in the hub cap. The hub cap is provided with two small vents, one for permitting lubricant to escape when expansion is excessive and the other to vent the enclosed portion of the hub behind the piston to atmospheric pressure.

3,785,707

AUTOMATICALLY CONTROLLED HYDROSTATIC BEARING

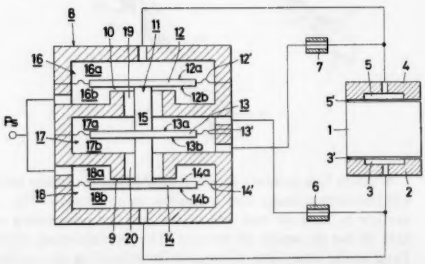
Toyokazu Mitsuoka, Miiza, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 29, 1971, Ser. No. 193,869

Claims priority, application Japan, Oct. 30, 1970, 45/95680

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **8 Claims**



This invention is concerned with an automatically controlled hydrostatic bearing. The automatically controlled

hydrostatic bearing comprises a hydrostatic bearing which has two opposite bearing recesses each communicating with a fixed linear external restrictor and a pressure-balance type control valve which has its restrictors formed with gaps of parallel plates and which functions so as to keep constant the ratio between the supply pressures to the fixed linear external restrictors and the pressures in the corresponding bearing recesses.

3,785,708

STATIC FLUID PRESSURE BEARINGS

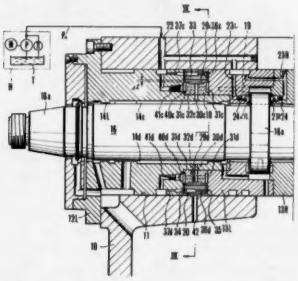
Yasukichiro Miyasaki, 3081, Oizumi, Gakuen-cho, Nerima-ku, Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,578

Claims priority, application Japan, Oct. 12, 1971, 46/79891; Mar. 6, 1972, 47/22218; Mar. 6, 1972, 47/22219

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **7 Claims**



In a static fluid pressure bearing, a pressure receiving surface is formed on the outer surface of bearing metals in concentric with the bearing bore and a plurality of pressure receiving pockets of the same number as the bearing pockets are formed on the pressure receiving surface. Respective bearing pockets are communicated with pressure receiving pockets through independent passages. A floating ring is provided to surround the pressure receiving surface with a small clearance therebetween, and a plurality of variable throttle means are formed by the cooperation of the pressure receiving pockets and the floating ring. The fluid under pressure is supplied to the bearing pockets through the variable throttle means to bring back the deviated shaft to the neutral position.

3,785,709

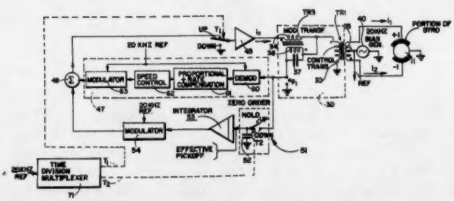
FORCE-POSITION DECOUPLER FOR ELECTROSTATIC GYROSCOPE SUSPENSION SYSTEM

James L. Atkinson, La Mirada, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed June 7, 1972, Ser. No. 260,625

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **7 Claims**



In a suspension and pickoff system for an electrostatic gyroscope, a sensing circuit substantially decouples position signal information from a control signal for utilization by two parallel feedback servomechanism paths which respectively separate the position signal into high and low frequency signal components. The composite output from the two paths is selectively disconnected from position control to allow the control signal output from an amplifier to die out. For a preselected portion of each period of time that the composite output is disconnected, the position signal information from the sensing circuit is sampled and held in one of the paths for use when the composite output is again connected into servocontrol.

3,785,710

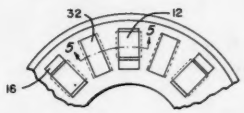
SEPARATOR INSERT FOR THRUST BEARINGS

Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation-in-part of Ser. No. 218,159, Jan. 17, 1972. This application Oct. 30, 1972, Ser. No. 301,771

Int. Cl. F16c *23/58*

U.S. Cl. 308—235 **3 Claims**



A thrust bearing separator insert is claimed which reduces wear due to inertial forces in high speed bearings, and prevents wedging of retainer halves in high thrust applications.

3,785,711

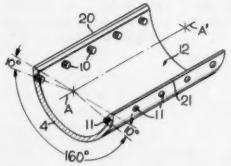
SUPPORT BEARING AND ASSEMBLY FOR ROTARY KILNS

Robert M. Bliemeister, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 12, 1972, Ser. No. 252,632

Int. Cl. F16c *11/00*

U.S. Cl. 308—237 R **3 Claims**



A support assembly is disclosed for carrying rotating machines such as kilns, grinding mills and other such equipment. A support roller is provided with axially extending trunnions journaled in a semi-cylindrical journal bearing. The semi-cylindrical journal bearing is provided with a plurality of spacing means which may be small cylindrical plugs made of a bearing material, and which project radially inward from the inner circumferential surface of the semi-cylindrical bearing and engage the trunnion. The spacing plugs are arranged in two rows parallel to the trunnion axis with the rows being in close spaced relation to terminal edges of the semi-cylindrical bearing that are parallel to the trunnion. The two rows of spacing plugs are circumferentially spaced apart at least about 140°. Between the two rows of spacing plugs the bearing is provided with a continuous smooth inner circumferential sur-

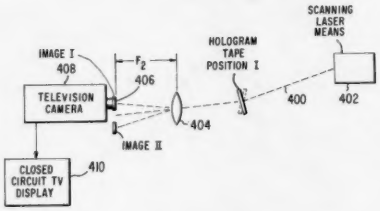
face without any such spacing means in order that a major portion thereof engages the outer circumference of the trunnion in load carrying support thereof. Each of the axially extending terminal edges of the bearing is connected to the inner circumferential bearing surface by a bevel surface which cooperates with the inner circumferential bearing surface and an adjacent portion of the outer circumferential surface of the trunnion, to define a reservoir for receiving and distributing lubricating oil on the portion of the bearing surface engaged in load carrying support of the trunnion.

3,785,712

PLAYING BACK REDUNDANT HOLOGRAMS BY SCANNING

William James Hannan, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,315
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **10 Claims**



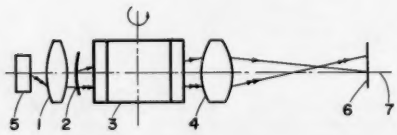
By playing back a redundant hologram composed of a predetermined periodic pattern of subholograms with a scanning laser beam no larger in size than a subhologram, a greater optical efficiency and a higher signal-to-noise ratio are achieved. Two spatially-multiplexed redundant holograms of two separated scenes or objects may be recorded on the same given area of a recording medium.

3,785,713

OPTICAL DEVICE

Sten Walles, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed June 7, 1972, Ser. No. 260,595
Claims priority, application Sweden, June 7, 1971, 7385/71
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **3 Claims**



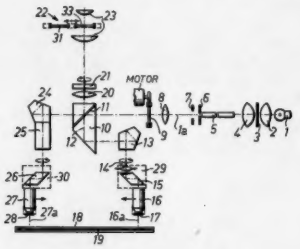
The present invention relates to a device to generate, starting from a stationary slit, an image of this slit which scans in its transverse direction, comprising a light source arranged in such a way in front of this slit, that the principal rays through the slit are parallel to the optical axis of the device, and a straight, equilateral, transmitting polygonal cylinder located behind the slit which is arranged so as to rotate about its axis of symmetry parallel to the longitudinal direction of the slit, and a system of lenses arranged between the said polygonal cylinder and the image.

3,785,714

SPLIT-FIELD MICROSCOPE

Fromund Hock, Wetzlar; Hennig Feldmann, Muenchholzhausen, and Heinz Fialkowski, Wetzlar, all of Germany, assignors to E. Leitz GmbH, Wetzlar, Germany

Filed Oct. 12, 1971, Ser. No. 188,307
Claims priority, application Germany, Oct. 19, 1970, P 20 51 174.4
Int. Cl. G02b *21/18*
U.S. Cl. 350—15 **13 Claims**



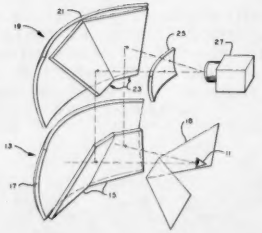
The split-field microscope of the present invention has a polarizer in the illuminator, a polarizing beam splitter for simultaneous or alternative illumination of both object fields, equal optical path lengths for the polarized split partial beams between splitting and reunion, means for deflecting the polarized partial beams in the direction toward parallel-disposed objectives and a quarter-wave plate disposed in each illuminating beam path. The imaging ray beams are passed backwards through the aforementioned components up to the central prism and a tube lens system and an ocular, connected after the central prism, are transited by the combined imaging beams.

3,785,715

PANORAMIC INFINITY IMAGE DISPLAY

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed May 17, 1972, Ser. No. 254,023
Int. Cl. G02b *17/00*
U.S. Cl. 350—55 **6 Claims**

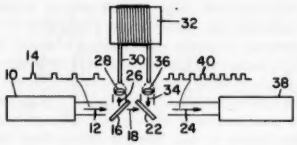


A wide angle infinity image display particularly useful in combination with flight trainers and the like is shown. A first tier of abutting mirror beam-splitter displays is arranged around a viewing point and have as an input an intermediate image from a similar tier located above the first tier. With this arrangement it is possible to use a single input screen for the image source into the upper tier and avoid the use of correcting lens.

3,785,716
OPTICAL WAVEGUIDE DELAY LINE

Robert D. Maurer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,897
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **5 Claims**

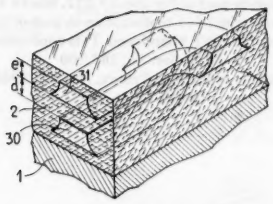


A glass optical waveguide fiber having a V value in the range of about 1.0 to 35 is coiled about a support member to form one or more layers of fiber. A layer of light absorbing material may be disposed upon the surface of the fiber to prevent cross-talk. Where two or more layers of fiber are disposed on the support member, adjacent layers of fiber may be separated by a layer of light absorbing material if the fiber is not provided with an extramural absorbing layer.

3,785,717
STEPPED INTEGRATED WAVEGUIDE STRUCTURE WITH DIRECTIONAL COUPLING AND A METHOD OF MANUFACTURING SUCH STRUCTURES

Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 10, 1972, Ser. No. 279,726
Claims priority, application France, Sept. 16, 1971, 7133391
Int. Cl. H01p *5/14, 3/16;* **G02b** *5/14*
U.S. Cl. 350—96 WG **9 Claims**



A multilayer structure of integrated optical waveguides is provided.

Each waveguide is produced by the diffusion of a doping agent into the layer into which it is integrated. This doping agent, in the zone in which it is implanted, causes a variation in the refractive index. The result is that the waveguide is formed by a region of higher refractive index than that of the layer in which it is implanted.

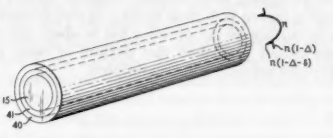
Thus, superimposed waveguide structures are obtained which can be used to form directional couplers.

3,785,718
LOW DISPERSION OPTICAL FIBER

Detlef Christoph Gloge, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 11, 1972, Ser. No. 288,033
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **7 Claims**

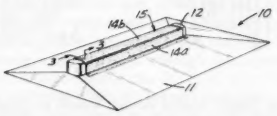
The faster propagating, higher order modes are selectively removed from a multimode optical fiber by either attenuating said modes or by coupling the modes out of the fiber core and into the surrounding cladding. In one embodiment the fiber core is surrounded by a low-loss cladding of prescribed thickness, and a refractive index that is no greater than that of any portion of the core. In an alternate embodiment, the core is surrounded by a low-loss cladding whose refractive index is greater than that at the periphery of the core.



3,785,719
ROADWAY LANE DELINEATOR HAVING AN ELASTOMERIC REFLECTIVE PORTION

Nelson Jonnes, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 74,079, Sept. 21, 1970, abandoned. This application July 21, 1972, Ser. No. 273,733
Int. Cl. G02b *5/12*
U.S. Cl. 350—105 **8 Claims**

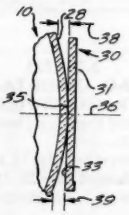


A roadway lane delineator comprising a base portion, an elastomeric reflector portion carried by the base portion, and a retro-reflective structure supported on an exterior surface of the reflector portion.

3,785,720
FILTER FOR OBTAINING A THREE-DIMENSIONAL EFFECT

William Frederick Kyryluk, 1578 W. 71st Ave., Vancouver, British Columbia, Canada

Filed May 23, 1972, Ser. No. 256,016
Int. Cl. G02b *27/22, 5/22*
U.S. Cl. 350—144 **10 Claims**



Light transmitting filter for obtaining apparent three-dimensional effect when viewing two-dimensional image on screen. Filter has tinting density so that light from image passed by filter is reduced so that two-dimensional image viewed through the filter appears as three-dimensional image. Filter has neutral grey tinting density within specified limits and is used in spectacles for viewing television or movie screens, or

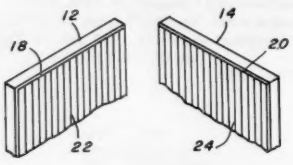
as separate screen in front of television screen. For separate television screen only, outer surface of screen is textured to reduce undesirable reflections, texture being such that small portion of area of filter surface is covered by discrete raised portions projecting from surface. Textured surface produced by spraying screen with clear lacquer so that droplets of spray falling on surface do not coalesce but produce discrete raised portions closely spaced so that portion of outer surface of filter remains between adjacent droplets.

3,785,721

DISPLAY DEVICES UTILIZING LIQUID CRYSTAL LIGHT MODULATION WITH VARYING COLORS

Thomas B. Harsch, Stow, Ohio, assignor to International Liquid Xtal Company, Cleveland, Ohio

Filed July 15, 1971, Ser. No. 162,833
Int. Cl. G02f *1/16*
U.S. Cl. 350—150 **9 Claims**



A nematic liquid crystal device which is electrically controlled in order to produce colors which can be displayed for entertainment or advertising purposes. The liquid crystal material is sandwiched between a pair of parallel transparent plates coated with transparent conducting films. The coated plates are rubbed in the same direction such that the nematic molecules align parallel to the glass surface and point in the rubbed direction. The liquid crystal sandwich structure is then placed between linear polarizers which are oriented either parallel or crossed with respect to each other and at 45° with respect to the rubbed direction. By applying an electric field across the liquid crystal material via the aforesaid transparent conducting films, the color observed through the polarizers can be made to vary, depending upon the magnitude of the electric field. Furthermore, by applying a continually varying voltage across the conducting films, the color can be made to continually vary also.

3,785,722

USE OF SiO_2-Nb_2O_5 AND/OR Ta_2O_5 GLASSES AS ULTRAVIOLET FILTERS

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 72,326, Sept. 15, 1970, abandoned. This application June 20, 1972, Ser. No. 264,426
Int. Cl. G02b *13/14*; **C03c** *3/24*; **G02b** *5/22*
U.S. Cl. 350—320 **1 Claim**

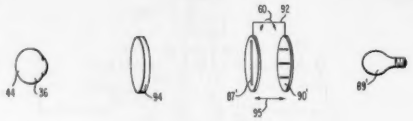
Glass filters and their use in controlling transmission of radiation is disclosed. The filters have a sharp transmission cut off within the ultraviolet region of the spectrum and also withstand high temperatures and severe heat shock. They are produced from a fused silica glass having a composition consisting essentially of silica and 1–25 percent R_2O_5 wherein the R_2O_5 consists of 0–5 percent Nb_2O_5 and/or 0–25 percent Ta_2O_5. The transmission cut off may be shifted across the ultraviolet transmission range by varying the amount of additive.

3,785,723

METHOD AND APPARATUS FOR LOCATING A PRINCIPAL MERIDIAN OF AN ASTIGMATIC OPTICAL SYSTEM

David L. Guyton, 5505 Huntington Pky., Bethesda, Md.

Filed Feb. 27, 1973, Ser. No. 336,323
Int. Cl. A61b *3/02*; **G01b** *9/00*
U.S. Cl. 351—34 **31 Claims**



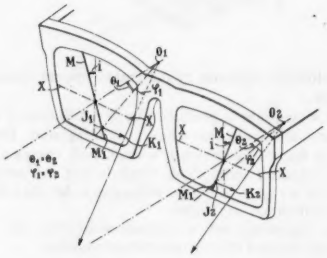
Target means comprising a specified rotatable array of linear images of light is described for use in locating a principal meridian of an astigmatic subject optical system, where the astigmatic subject optical system comprises a patient's eye in combination with such imaging means as may be placed before it. The array of linear images of light constituting the target means is equivalent to an array of astigmatic images of point sources of light, and the array may be produced by cylindrical lens means in combination with one or more point sources of light, by slit aperture means in combination with one or more point sources of light, or entirely by slit aperture means. The target means described provides high sensitivity in locating a principal meridian even in the presence of fluctuating spherical dioptric power of the patient's eye or in the presence of minor optical irregularities of the patient's eye.

3,785,724

OPHTHALMIC LENSES WITH PROGRESSIVELY VARYING FOCAL LENGTH

Bernard Cretin-Maitenaz, Joinville-le-Pont, France, assignor to Essilor International (Compagnie Generale d'Optique), Paris, France

Continuation-in-part of Ser. No. 19,772, March 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 683,865, Nov. 17, 1967, abandoned. This application June 15, 1972, Ser. No. 263,100
Claims priority, application France, Nov. 29, 1966, 6685403
Int. Cl. G02c *7/06*
U.S. Cl. 351—169 **2 Claims**



An improved ophthalmic lens with varying focal length, said lens being made of a refractive material and having two refractive surfaces one of which is divided into first, second and third substantially horizontally extending zones intended respectively for distant vision, intermediate distance vision and near vision, said one surface having an oblique meridian passing through the optical center of the lens and traversing said zones, said meridian being inclined downwardly from the temporal side of the lens toward the nasal side of the lens

along an angled path traced by the line of sight of a wearer in going from distant vision to near vision, said first zone occupying approximately the upper half of said one surface and having a substantially constant curvature providing a substantially constant focal length for distant vision, said third zone occupying a lower portion of said one surface and having a substantially constant curvature providing a substantially constant focal length for near vision, and said second zone lying between said first and third zones and having a varying curvature providing a varying focal length, the curvature of said second zone at successive points along said meridian varying progressively from the substantially constant curvature of said first zone to the substantially constant curvature of said third zone, said second zone having at each point thereof a minimum curvature $C_{min.}$ and a maximum curvature $C_{max.}$ except along said meridian where the minimum and maximum curvatures at each point thereof are of equal value, said second zone further having on one side of said meridian a first line which is a loci of points where $C_{min.}$ and $C_{max.}$ satisfy the following relation: $[C_{max.}-C_{min.}]= N$, where N has a given value which satisfies the relation: $N \leq 1/(n-1)$, n being the refractive index of said refractive material, and on the other side of said meridian a second line which is a loci of points where $C_{min.}$ and $C_{max.}$ satisfy the above-mentioned relation, the improvement consisting in that, when the lens is in use, any horizontal line in said second zone intersects successively said first line, said meridian and said second line at respective points of intersection, the point of intersection of said horizontal line with said meridian being substantially equally spaced from the points of intersection of said horizontal line with said first and second lines.

3,785,725

PROCESSING COMPOSITION RELEASE MECHANISM FOR FILM CASSETTE COMPRISING SELF-CONTAINED FILM PROCESSING SYSTEM

John F. Batter, Jr., Lincoln; Paul B. Mason, Magnolia; Joseph A. Stella, West Peabody; Paul W. Thomas, Jr., Duxbury, and Joseph H. Wright, Peabody, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1972, Ser. No. 227,092

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 **32 Claims**

Apparatus for controlling the release of processing composition in a film cassette comprising a roll of film and containing a film processing system. A container of film processing composition within the cassette is initially sealed by a tear strip that is pulled away, to release the composition for coating on the film, by an arm initially held in an inactive position. The arm is moved to a position adapted to engage a cam formed on a spool about which the film is coiled. The cam engages the arm to detach the tear-tab and release the processing composition when the spool is rotated in a predetermined sense.

3,785,726

FILM CARTRIDGE

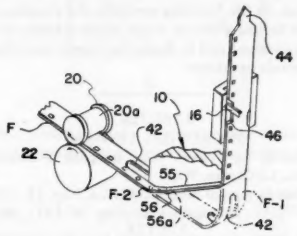
Stephen H. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,514

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 R **2 Claims**

A cartridge is adapted to handle a length of film or other strip material wherein the material has a portion with an opening therein between the side edges of the material and preferably near the trailing end portion of the strip. In the preferred embodiment described the cartridge is loaded with motion picture film to be exposed in a camera and includes two openings or apertures for receiving camera apparatus adapted to advance film through the cartridge. One of the apertures receives a film pull-down claw in a camera, the claw being effective to intermittently advance film past the exposure aperture in the cartridge. The other opening or aperture receives a capstan, for example, which is adapted to continuously advance film past a sound head in the camera for recording of sound onto the film during a filming sequence. During the normal filming sequences the film is advanced by the claw and the capstan along a first curved path through the cartridge



between the two apertures and, when the end of the film is reached by the film pull-down claw and it is ineffective to further pull film past the exposure aperture, the film then is advanced along a second path through the cartridge by the capstan only. A stop member in the form of a finger is provided in the cartridge along the second path and is positioned so that the finger can enter the opening in the film and be engaged by an edge of the opening, thereby securing the film against further advancement along the second path and through the cartridge by the capstan. This prevents advancement of the trailing end portion of the film completely past the apertures and into the take-up chamber of the cartridge, thereby permitting film to be extracted from the cartridge for processing by grasping the trailing end portion of the film and advancing it through the exposure aperture.

3,785,727

MOTION FILM PROJECTOR

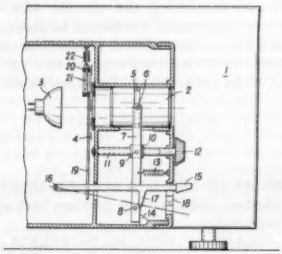
Harald Wessner, Neunkirchen, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 5, 1972, Ser. No. 295,296

Claims priority, application Austria, Oct. 12, 1971, A8824/71

Int. Cl. G03b *3/00*

U.S. Cl. 352—137 **8 Claims**



A motion film projector which comprises an image plane and a gate for holding a frame of a motion picture film to be

projected in the image plane. An optical system defines an optical axis, and the frame is located on the optical axis. A focusing device is provided for the optical system. A drive is arranged for feeding the film along a predetermined path including the image plane. The drive has at least two operating modes comprising at least one run mode and a still mode of operation for selectively providing motion picture projection and still picture projection. A focus adjuster is connected to the focusing device to provide a basic adjustment of the same for focusing the frames of the film during the run mode oepration. A mode selector controls the operating modes of the drive and has accordingly at least one run mode position and a still mode position. A coupling member is provided to connect the focusing device to the mode selector. The mode selector further has a plurality of focusing positions adjacent the still mode position. In the focusing positions the coupling member connects the focusing device to the mode selector to override the basic adjustment and to focus the frame individually during the still mode operation.

3,785,728

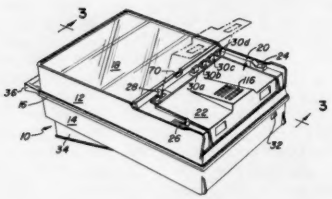
MICROFILM VIEWER

Arnis E. Peters, La Crosse, Wis., assignor to Gelatt Investments, Inc., La Crosse, Wis.

Continuation-in-part of Ser. No. 90,514, Nov. 18, 1970, Pat. No. 3,700,321. This application Aug. 26, 1971, Ser. No. 175,123

Int. Cl. G03b *21/11, 21/28*

U.S. Cl. 353—26 **3 Claims**



A portable, compact viewer for illuminating, enlarging and viewing individual microfilm frames which are carried on a filmstrip prepackaged in a cassette. The viewer is provided with electrical drive means for transporting the filmstrip within the cassette in a forward or reverse direction, at a high speed for traversing or at a low speed for scanning. Means integral with the drive means are provided to inhibit overrun of the transport, so as to provide accurate location and alignment of single frames and to provide substantial inching control. The viewer includes a cassette receiving compartment whose cover may be spring biased toward operative positions, and which cover aids in aligning the cassette with the optical system, and may additionally cooperate to prevent excessive heating from a heat source such as an illumination bulb. The viewer housing is of an improved construction which assures a high-contrast image under normal light conditions.

3,785,729

OVERHEAD PROJECTOR ROLLER ASSEMBLY

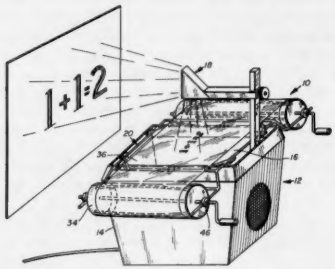
Kenneth R. Dasher, and Cyndia H. Dasher, both of 487 S. Allegheny, Tulsa, Okla.

Filed Mar. 1, 1971, Ser. No. 122,579

Int. Cl. G03b *21/132;* **B65h** *17/02*

U.S. Cl. 353—122 **6 Claims**

A roller device for use with an overhead projector comprises a frame having a roller mounted at each end. The frame is designed to be positionable on the horizontal ground glass optical member or lens of the typical overhead projector. The rollers are positioned on the frame at a point where the frame extends beyond the horizontal optical member of the projector, and the rollers are further positioned in a plane slightly below the plane of the horizontal member so that a sheet of



transparent writing material as described above may move from its supply position on each roller and be parallel to and in close proximity to the optical member of the projector as it passes over that member. Thus, indicia may be placed upon the transparent writing material at will.

3,785,730

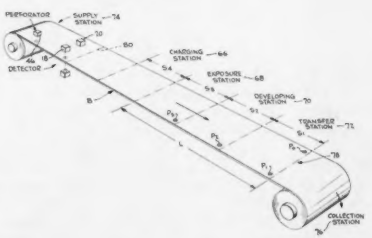
METHOD AND SYSTEM FOR VARYING THE POSITIONS OF IMAGE-FORMING SURFACES ON AN ELONGATE FLEXIBLE ELECTROPHOTOGRAPHIC SUPPORT BELT FOR DIFFERENT RUNS THEREOF

Guy Paul Weber, Arques La Bataille, and Philippe Marie Deshayes, Neuville Les Dieppe, both of France, assignors to La Cellophene, Paris, France

Filed Mar. 27, 1972, Ser. No. 238,130

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 **4 Claims**



Method and system for varying the positions of image-forming surfaces on an elongate flexible electrophotographic support belt for different runs thereof wherein the belt is marked during a run of substantially the entire length thereof from a supply station to a collection station past a charging station, an exposure station, a developing station and a transfer station, and during a following run the position of the belt relative to a reproduction commencement point is varied in accordance with the mark such that image-forming surfaces for the following run are positioned in areas between image-forming surfaces for the preceding run.

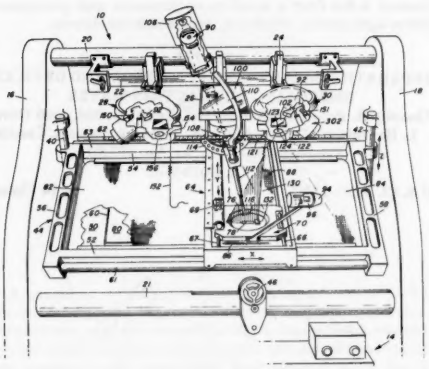
3,785,731
METHOD AND APPARATUS FOR PRODUCING ORTHOPHOTOPLANS

Jack W. Knauf, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 130,739, April 2, 1971, abandoned. This application June 2, 1972, Ser. No. 259,059

Int. Cl. G03b *27/32, 35/14*

U.S. Cl. 355—22 **22 Claims**



An orthophotoscope to provide color photomaps obtains a requisite stereoscopic model therein by stereoscopy wherein image separation arises from either filters or operation of a stereoimage alternator system made an integral part thereof. Recording during such system operation is accomplished by exposing photographic film very nearly continuously to light from one of the system projectors directed through a light selective shutter structure, and causing light from the other of the system projectors to be selectively obscured at all times to prevent exposure of the film sheet thereto. Continuous light for recording where filters are used is beamed unfiltered through a small uncovered area of a filter in one of the projectors.

3,785,732
MICROREADER

Nobuyuki Yanagawa, Oimachi Yamada, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

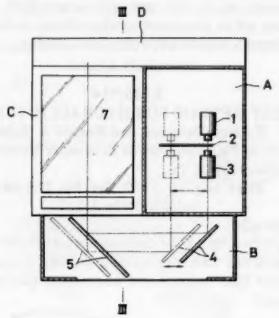
Filed Nov. 15, 1972, Ser. No. 306,563

Claims priority, application Japan, Nov. 15, 1971, 46/90657; Nov. 17, 1971, 46/91455; Nov. 29, 1971, 46/111058

Int. Cl. G03b *27/70*

U.S. Cl. 355—45 **12 Claims**

A microreader composed of a number of self-contained sections which may be assembled together in desired configurations and which sections include a projection unit containing means for automatically selecting and projecting desired information from one or a number of information cards; a screen unit for displaying the projected information; a reflector unit for appropriately transferring the projected information from the projector unit to the screen unit; and, if desired, a printer unit for reproducing the projected information. The screen unit has a surface for visually displaying the projected information and a surface for passing the projected information to the printer unit for copying and contains means for permitting the transfer of the projected information between them. The automatic information selecting system is described in detail.



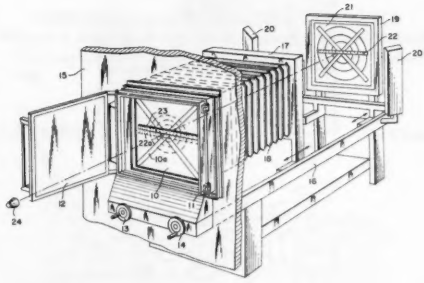
3,785,733
METHOD OF CALIBRATING A GRAPHIC ARTS CAMERA

Lee C. Bender, Stone Park, Ill., assignor to Log Etronics, Inc., Springfield, Va.

Filed Jan. 29, 1973, Ser. No. 327,356

Int. Cl. G03b *27/68*

U.S. Cl. 355—77 **6 Claims**



A graphic arts camera is calibrated by first determining the effective focal length of the lens employed therein, and by thereafter positioning the lens board and copy board at approximate positions corresponding to the lens conjugate of 1:1. A target, comprising a number of concentric circles the diameters of which are empirically determined to represent off-axis locations at which the effects of lateral chromatic aberration are minimal for lenses of various different effective focal lengths, is placed on the copy board, a precision ruler is superimposed on the target, and a matching precision ruler is mounted on the ground glass at the rear of the camera. The camera lens is set to wide open aperture, whereafter the copy board is adjusted, while viewing the overall target image, to focus the camera; the lens board is adjusted, using the precision rulers, to adjust the image size; and these adjustments are repeated alternatively until proper focus at a 1:1 magnification ratio is approximately achieved. The lens board is then further adjusted while observing the magnified image of a particular portion of the target, to achieve a precise focus based upon color fringing effects in that magnified image. When op-

timum focus at wide-open aperture and at the conjugate of 1:1 have been achieved, and checked at maximum enlargement and reduction, the pointers on the camera are set to match the scaling system or, in the case of a screw drive camera, the counters are set to the exact numbers listed in the calibration charts ordinarily associated with such cameras.

3,785,734

TEST METHOD FOR HYDRAULIC FLUIDS

William C. Walters, Delmont, and Ronald A. Zabinski, Springdale, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed Aug. 10, 1972, Ser. No. 279,444
Int. Cl. G01n *21/22*
U.S. Cl. 356—36 **2 Claims**

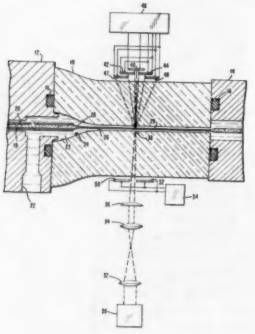
A method for testing for the contamination level of hydraulic fluids and the like, comprising passing a sample through two adjacent filter papers and comparing the light transmissivity thereof.

3,785,735

PHOTOANALYSIS METHOD

Mitchell Friedman, Yorktown Hts.; Louis A. Kamentsky, Briarcliff Manor, and Isaac Klinger, Yorktown Hts., all of N.Y., assignors to Bio/Physics Systems, Inc., Kantonah, N.Y.

Division of Ser. No. 2,750, Jan. 14, 1970, Pat. No. 3,705,771.
This application Jan. 19, 1972, Ser. No. 219,187
Int. Cl. G01r *33/16*
U.S. Cl. 356—39 **9 Claims**



A narrow beam of light is directed through an optical chamber to intersect a thin stream of small particles to be optically analyzed. At least two photoresponsive pick-up elements are positioned at different angular positions with respect to the beam to simultaneously detect different optical reactions of each particle to the beam illumination.

3,785,736

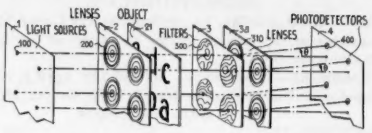
SMALL-SIZED OPTICAL CORRELATOR

Erich Spitz, and Guy Bismuth, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 13, 1972, Ser. No. 217,589
Claims priority, application France, Jan. 14, 1971, 7101146
Int. Cl. G06k *9/08*; G02b *27/00*; G06k *9/00*
U.S. Cl. 356—71 **7 Claims**

The present invention relates to double-diffraction optical correlators.

According to the invention there is provided a multi-channel optical correlator for shape recognition wherein the lenses



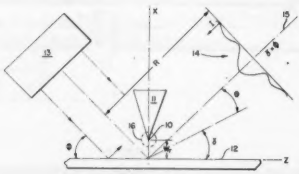
and the filters are all constituted by patterns of fringes ; each channel is fed from a quasi-monochromatic and quasi-punctiform light source, which may be spatially incoherent.

3,785,737

SEPARATION MEASUREMENT METHOD AND DEVICES EMPLOYING DIFFRACTION WAVES

Timothy R. Pryor, 5423 York Ln., Bethesda, Md., and Omer L. Hageniers, 357 Rosedale Ave., Windsor, Ontario, Canada

Filed May 30, 1972, Ser. No. 257,801
Int. Cl. G01b *9/02*
U.S. Cl. 356—111 **14 Claims**



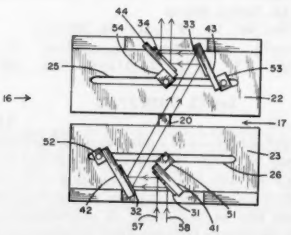
A method is disclosed for measuring the separation between a surface and a member. The member includes diffraction wave producing means such as an object boundary. Incident electromagnetic waves are directed at the diffraction wave producing means before and after reflection from the surface and an interference pattern is produced. Analysis of this interference pattern gives the separation.

3,785,738

MULTI-ANGLE BEAM DIRECTOR FOR TESTING APERTURE MASKS

Jerell B. Hoppke, Ham Lake, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

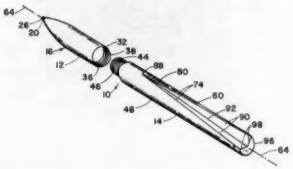
Filed Oct. 21, 1971, Ser. No. 191,522
Int. Cl. G01n *21/16*
U.S. Cl. 356—138 **4 Claims**



A testing apparatus for television aperture masks in which four mirrors are adjustably mounted in a frame so as to be insertable in a conventional optical densitometer testing device

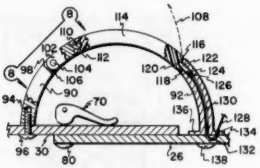
to divert transmitted light from a path generally perpendicular to the surface of the aperture mask to a path of a predetermined angle through the mask.

3,785,739
MAGNETIC WRITING INSTRUMENT
Thomas W. Hodkin, 301 N. 7th St., Council Bluffs, Iowa
Filed Apr. 14, 1972, Ser. No. 244,090
Int. Cl. B43k *29/00*
U.S. Cl. 401—52 **10 Claims**



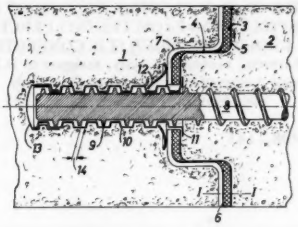
A magnetic writing instrument having an outer surface thereof magnetized, the rearward end of said instrument being magnetized, said instrument having a recess in its rearward section and extending to its rearward end in which a cylindrical portion of an automobile gear selector lever can be received.

3,785,740
EXPANDABLE BINDER
Kline D. Strong, 1726 Countryside Dr., Salt Lake City, Utah
Filed Sept. 21, 1970, Ser. No. 74,067
Int. Cl. B42f *3/04*
U.S. Cl. 402—29 **1 Claim**



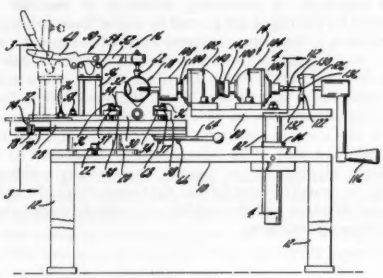
A novel binder which opens flat and allows pages therein to lie flat including substantially rigid backing members which protract when a large number of pages are used and retract when fewer pages are used. An improved clamp maintains the backing members immovable in any desired protracted position. Rigid page holders project from the backing members, the holders having free ends spaced one from another a distance determined by the relative positions of the backing members. The holders are detachably connected by a replaceable bridge having a preselected length to correspond to the relative position of the backing members. In an alternative embodiment, selected ones of the page holders have a hinged end connected to one end of the bridge and biased toward an open position and others of the page holders have a bridge-releasing mechanism accommodating simultaneous opening of all bridges at once.

3,785,741
EXPANSION JOINT CONSTRUCTION FOR CONCRETE SLABS
Alois Lodige, Frankfurter Weg. 72, Paderborn, Germany
Continuation of Ser. No. 25,205, April 2, 1970, abandoned.
This application Feb. 28, 1972, Ser. No. 229,645
Int. Cl. E04b *1/68*
U.S. Cl. 404—51 **6 Claims**



An expandable tongue and groove joint between abutting edges of reinforced concrete slabs having spaced nesting metal strips of hat-shaped cross section integrally formed with the slabs. The mantle portions of the strips are in sliding contact with each other, while the spaces between the remaining portions of the strips are filled with compressible expansible material. In another form, a threaded dowel anchored in one slab extends through the strips into a tube in the other slab. The dowel may move axially of the tube to accommodate contraction and expansion of the slabs.

3,785,742
DEBURRING AND CHAMFERING APPARATUS
Willard A. Haase, and Ingwald E. Wegenke, both of Montello, Wis., assignors to Montello Products Company, Montello, Wis.
Filed Aug. 24, 1972, Ser. No. 283,503
Int. Cl. B23b *29/26*
U.S. Cl. 408—3 **12 Claims**



Apparatus for deburring and chamfering at least one side of an opening in a contoured surface of a metal workpiece comprising a sliding platform having a clamping mechanism for holding and positioning the workpiece relative to a cutting tool which uniformly cuts the edge of the opening to deburr and chamfer it. The apparatus has an elongated spindle mounted for axial and rotational movement and a cam follower on the spindle that cooperates with a stationary cam surface having a contour corresponding to the contour of the workpiece surface. During rotation of the spindle, the cutting

tool is guided to follow the contoured surface of the workpiece opening and thereby produces a uniformly chamfered opening.

3,785,743

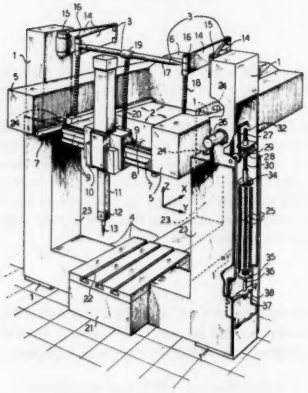
STRUCTURE FOR MEASURING MACHINES, MACHINE TOOLS AND THE LIKE IMMUNE FROM THE INFLUENCE OF VARIABLE, FIXED OR MOBILE LOADS ACTING ON IT, INCLUDING THE WEIGHT OF THE WORKPIECES AND FROM THE INFLUENCE OF THE GROUND TO WHICH IT IS CONNECTED

Franco Sartorio, Moncalieri, Italy, assignor to D.E.A. Digital Electronic Automation S.p.A., Moncalieri, Italy

Filed May 12, 1972, Ser. No. 252,685

Int. Cl. B23b *47/00*

U.S. Cl. 408—143 **13 Claims**



A structure for measuring mechines or machine tools adapted for resting on the ground by way of three columns and comprising at least one worktable adapted to support a workpiece to be machined or measured and saddles mobile with respect to said worktable is described. The structure includes a supporting substructure to which the worktable is fixed, a working substructure on which the saddles are mobile and a force substructure connected by three rigid supports to the ground. The supporting substructure is connected by three resilient supports to the ground, the working substructure restes by means of three further rigid supports on the supporting substructure and the saddles are resiliently supported by the force substructure.

3,785,744

CONDUCTION PUMP FOR CORROSIVE LIQUID METALS

Henri Carbonnel, Antony, France, assignor to Groupement Atomique Alsacienne Atlantique, Plessis Robinson, France

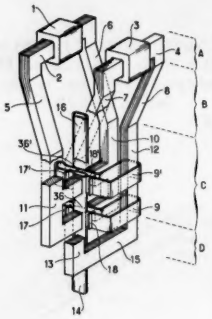
Filed Mar. 31, 1972, Ser. No. 240,215

Claims priority, application France, Mar. 31, 1971, 71.11372

Int. Cl. H02k *1/12*

U.S. Cl. 417—50 **8 Claims**

Conduction pump for corrosive liquid metals, which can be dismantled, whose body consists of modular elements made of refractory materials. Each element comprises recesses corresponding to the various detachable components of the pump: magnetic circuits,



electric coil, electrodes and duct. By including in the pump body several active modular elements, it is possible to increase very greatly the discharge height of the pump.

3,785,745

SEALING BAR FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE

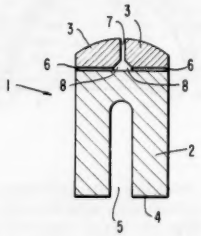
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart Unterturekheim, Germany

Filed Jan. 25, 1971, Ser. No. 109,474

Claims priority, application Germany, Jan. 24, 1970, P 20 03 203.5

Int. Cl. F01c *19/02*; **F04c** *15/00, 27/00*

U.S. Cl. 418—117 **28 Claims**

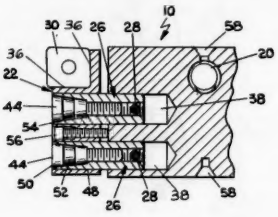


A sealing bar for a rotary piston internal combustion engine, particularly of trochoidal construction, which is arranged within a piston groove so as to be movable in a radial direction, and which sealingly slides with its head portion along a contact surface in the housing case of the internal combustion engine; the sealing bar is provided with a multipartite, preferably two-partite, wear head portion subdivided substantially parallel to the longitudinal axis and having small-connecting surfaces with respect to the support portion of the sealing bar.

3,785,746
ADJUSTABLE TOOL HOLDER

Heinz K. Wolf, and Dean C. Averbeck, both of Farmington, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Jan. 17, 1972, Ser. No. 218,292
Int. Cl. B23b *29/034;* **B23q** *3/00*
U.S. Cl. 408—182 **17 Claims**

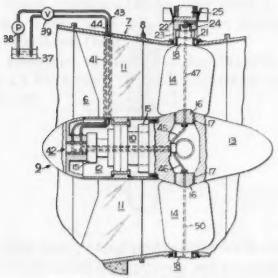


An adjustable tool holder having a block portion adapted for mounting on a boring bar or the like. Tool-holding means is adjustably attached to the block portion and movable with respect thereto to vary the relative spacing between the cutting edge of a tool carried thereby and the boring bar to vary the bore diameter. Adjustment means carried in the tool holder is cooperable with the block and accessible from an outer edge of the tool holder so that adjustment may be made without removal of tool holder from the boring bar.

3,785,747
AXIAL FLOW HYDRAULIC TURBINE GENERATOR INSTALLATION

Howard A. Mayo, Jr., York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 10, 1972, Ser. No. 305,494
Int. Cl. F01d *1/30, 15/10*
U.S. Cl. 415—33 **4 Claims**

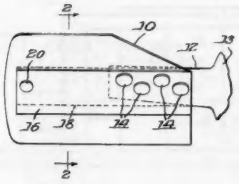


A hydraulic turbine generator installation wherein the turbine rotor is supported centrally within a water confining tube and the generator rotor is supported by a ring connected to the radially outer ends of the turbine blades and rotates with the turbine blades. The blades are supported by the ring and a hub located in the tube to permit pivotal movement thereof. Hydraulic servomotors or the like are also supported by the ring and are connected to the blades to pivot the blades. A single power source for the servomotors is located on a stationary portion of the installation and connected by conduits through the turbine blades.

3,785,748
REINFORCED AUTOMOTIVE FAN

Thomas G. Gorman, Hanover, Mich., assignor to Hayes-Albion, Jackson, Mich.

Filed Feb. 3, 1972, Ser. No. 223,179
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **2 Claims**

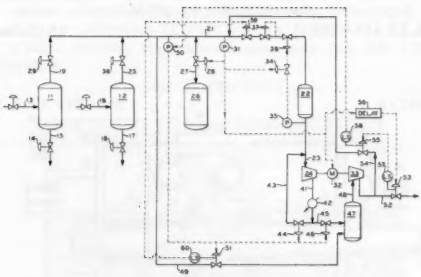


A reinforced automotive flex-fan in which both sides of the flexible blade are reinforced by a one-piece member wrapped around the radial extremity of the blade.

3,785,749
CONTROL SYSTEM FOR TWO-STAGE COMPRESSORS

Robert J. Perry, Houston, Tex., and Bobbie L. Whitson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 24, 1972, Ser. No. 237,789
Int. Cl. F04b *49/02, 49/08*
U.S. Cl. 417—12 **6 Claims**



A control system for a first stage compressor and a second stage compressor provides for the startup of the compressors under no load conditions, and the operation of the compressors with intermittent supply of gases of widely varying pressures. The first stage is bypassed when the supply pressure is above a predetermined value.

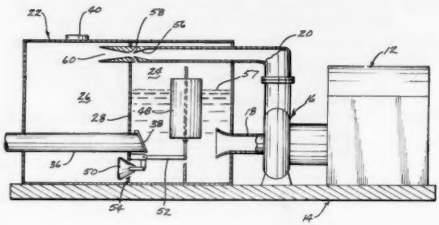
3,785,750
WELLPOINT SYSTEM

Cameron C. Bryant, 8504 Izard Street, Omaha, Nebr.

Filed Sept. 28, 1972, Ser. No. 292,985
Int. Cl. F04b *49/00*
U.S. Cl. 417—211.5 **11 Claims**

A wellpoint system for removing fluid from the earth is disclosed comprising a motor driven centrifugal pump having a pump chamber divided into a suction chamber and a discharge chamber by a bulkhead. A discharge pipe extends from the discharge side of the pump through the suction chamber and into the discharge chamber. A venturi is pro-

vided in the discharge pipe in communication with the suction chamber so that a suction is created in the suction chamber as fluid passes through the discharge pipe into the discharge chamber. A plug valve is mounted in the bulkhead and is controlled by a float positioned in the suction chamber so that the



lowering of the float will open the plug valve. A suction line extends from the wellpoint header system and is in communication with the suction chamber. A normally closed flap valve is provided on the suction line within the suction chamber to permit the pump chamber to be initially filled.

3,785,751

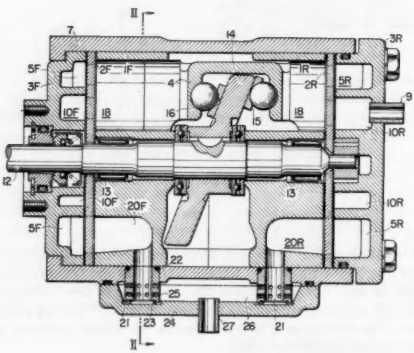
SWASH PLATE TYPE COMPRESSOR

Mamoru Nemoto, Katsuta, and Seijiro Tani, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 87,896, Nov. 9, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,024

Int. Cl. F04b *1/16, 21/00*

U.S. Cl. 417—269 **25 Claims**



A swash plate type compressor comprising a cylindrical casing, a pair of cylinder blocks disposed in the cylindrical casing, and three double-acting pistons being disposed within the cylinder blocks and reciprocated by means of a swash plate. Each of the cylinder blocks is provided with a high pressure passageway and a low pressure passageway, and a silencing chamber is formed on the cylindrical casing by means of a cover member which is mounted in a gas-tight manner on the cylindrical casing. The silencing chamber communicates with the high pressure passageway through a silencing pipe. An alternative embodiment utilizes a spring member for communicating the silencing chamber with the high pressure passageway.

3,785,752

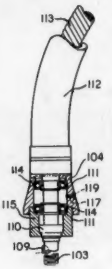
PORTABLE SUBMERSIBLE PUMP

Carlos A. Crespo, P.O. Box 906, Stamford, Conn.

Filed Sept. 15, 1971, Ser. No. 180,787

Int. Cl. F04b *35/06;* **F16c** *1/02*

U.S. Cl. 417—319 **3 Claims**



A submersible pump wherein the motor unit is removed from the liquid environment and the motive force for the pump impeller, located in the liquid to be pumped, is transmitted from the motor unit by means of a flexible power shaft. The pump is portable and may have a gear box or a clutch. In addition, the present submersible pump may take the form of an axial flow pump when low to moderate lifts are required at large capacities. A special flexible shaft terminal is provided wherein the pump and impeller are attached directly to the flexible shaft unit.

3,785,753

ELECTRIC DRIVES FOR CENTRIFUGAL PUMPS

Alexandr Antonovich Bogdanov, Strastnoi bulvar, 7, kv. 39, and Zinaida Sirafimovna Pomazkova, Starokashirskoe shosse, 2, korpus 12, kv. 96, both of Moscow, U.S.S.R.

Filed Oct. 13, 1971, Ser. No. 188,732

Int. Cl. F04b *17/00*

U.S. Cl. 417—424 **1 Claim**

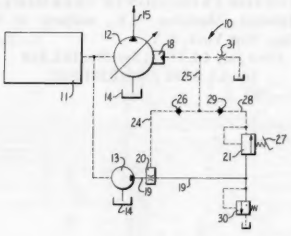
An electric drive for a submergible pump employed in oil production industry has a vertical oil-filled electric motor the lower portion of which is secured to a hydraulic compensator or surge chamber, while the upper portion is secured to a protector; the protector consists of a casing hermetically divided by a diaphragm into inner and outer chambers to be filled with protective liquid; an intermediate shaft is provided for transmitting rotation from the electric motor to the pump, the shaft having a sealing device concentrically disposed within the casing of the protector; a movable portion of the sealing device is fixed in the axial direction relative to a stationary portion of the same by means of a sliding bearing and two ring pivots disposed at both sides of said bearing. A release valve disposed in the casing of the protector is provided for controlling any excessive pressure in the space above the movable portion of the sealing device.

3,785,754

MANUAL OVERRIDE SYSTEM FOR A VARIABLE VOLUME PUMP

Dean E. Miller, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 27, 1972, Ser. No. 248,060
Int. Cl. F15b 9/04
U.S. Cl. 417—213 7 Claims



A hydraulic control system in which an engine driven variable displacement fluid pump provides a source of fluid pressure for powering work implements, and having automatically operable control means responsive to engine speed to control displacement of the variable displacement pump to correspond to engine horsepower, is provided with a manually operable control means to override the automatic control system for selectively controlling the displacement of the variable displacement pump.

ERRATA

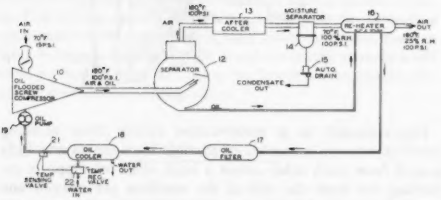
For Classes 417—050 and 418—117 see:
Patent Nos. 3,785,744 and 3,785,745

3,785,755

AIR COMPRESSOR SYSTEM

Walter M. Novak, Portland, Oreg., and Fred A. Thurmond, Jr., Eureka, Calif., assignors to Rogers Machinery Company, Inc., Portland, Oreg.

Filed Nov. 22, 1971, Ser. No. 201,076
Int. Cl. F01c 21/04; F25d 17/06; B01d 53/26
U.S. Cl. 418—85 3 Claims



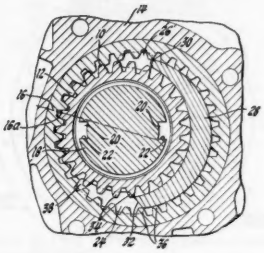
Air and oil are flowed through an oil flooded screw compressor which heats the air and oil, after which the air and oil are separated and the air is cooled to extract moisture therefrom. Then the cooled air and the hot oil are passed through a heat exchanger which heats the air to a desired temperature for use and cools the oil to a desired temperature for recirculation through the compressor.

3,785,756

GEAR PUMP

Les M. Langenderfer, Toledo, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1972, Ser. No. 282,924
Int. Cl. F01c 1/10; F03c 3/00; F04c 1/06
U.S. Cl. 418—170 2 Claims



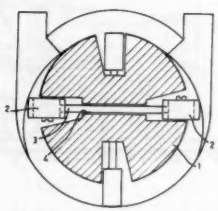
An internal-external gear pump having a crescent member opposite the mesh point of the gears for preventing direct fluid communication between the inlet and outlet ports. The crescent has a leading edge adjacent the inlet port which simultaneously seals the spaces between the gear teeth from the zero displacement interval of the inlet port as the gears rotate past the leading edge.

3,785,757

BLADE JOINT

David Paul Stamm, Hendrik-Ido-Ambacht, Netherlands, assignor to Conoflow Europa N.V., Dordrecht, Netherlands

Filed Oct. 22, 1971, Ser. No. 191,918
Claims priority, application Netherlands, Oct. 23, 1970, 7015539
Int. Cl. F01c 21/00
U.S. Cl. 418—255 6 Claims

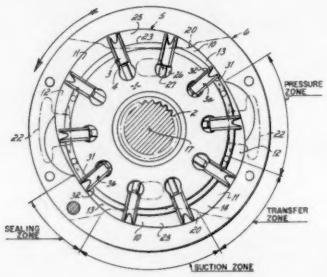


The blade joint structure disclosed, to be used in pumps, blowers, hydrometers, and the like machines, comprises a pair of spaced blades mounted on the ends of a rod extending diametrically through the rotor of machines of the type referred to. The joint structure is such that the blades have at least two degrees of freedom provided by a blade having a bore in which a clamping means is inserted which itself has a bore at right angles for receiving the end of the rod. The rotor is provided with a slot or bore through which the mounting rod extends and in which it is movable. In the illustrated embodiment the means for securing the clamping means to the rod includes a bolt carried by the clamp.

3,785,758
VANE PUMP WITH RAMP ON MINOR DIAMETER

Cecil E. Adams; James C. Swain, and Jack W. Wilcox, all of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,774
Int. Cl. F01c 1/00
U.S. Cl. 418—260 **15 Claims**

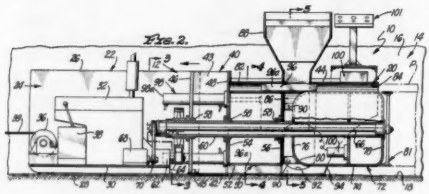


A hydraulic pump of the vane type wherein the cam surface of the stator is formed with a ramp on the minor diameter portion traversed by the vanes as they move from the pressure zone to the suction zone. When vanes of the two lip type are used, an in-ramp is especially desirable for pumps wherein the vane are spring operated, while an out-ramp is especially desirable for pumps wherein the vanes are operated by hydraulic actuators. The provision of such ramps has been found to improve radial balance of the rotor, vane tip sealing, and to reduce pressure ripple, as well as wear.

3,785,759
MACHINE FOR FORMING A CONTINUOUS SEAMLESS CONCRETE PIPE

B. Neil Johnson, 10811 Newcomb Ave., Whittier, Calif., and Robert A. Midthun, 1404 N. Tustin, Santa Ana, Calif.

Filed Jan. 24, 1972, Ser. No. 220,258
Int. Cl. E03f 3/06
U.S. Cl. 425—59 **8 Claims**

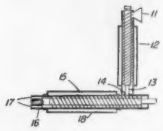


A continuous seamless pipe is formed in a trench from a cementitious mix by advancing through the trench a carriage mounting a trailing cylindrical drum with its axis parallel to the direction line of carriage movement and a diameter equal to the internal pipe diameter, and a cylindrical skirt having a diameter approximating the outer pipe diameter concentrically surrounding the drum to define an intervening rearwardly opening annular cylindrical containing an annular piston. The cementitious mix is fed into the front end of the cylinder and the piston is driven rearwardly through the cylinder to extrude the mix through the open rear end of the cylinder to form the pipe wall and exert a forward reaction force on the carriage for propelling the latter through the trench. The plunger may be segmented to obtain more uniform extrusion about the full cylinder circumference. The drum may be driven in rotary or other motion, and the drum, plunger and/or skirt may be vibrated to compact the extruding mix. A rotary trowel on the rear end of the drum smooths the inner surface of the extruded pipe. The preferred cementitious mix is a low slump concrete which may be extruded to form a seamless concrete pipe without the need to internally support the pipe.

3,785,760
APPARATUS FOR EXTRUSION OF THERMOPLASTICS

David E. Johnson, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,555
Int. Cl. B29b 1/06; B29f 3/02
U.S. Cl. 425—207 **1 Claim**

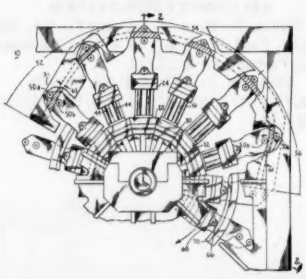


In a method and apparatus for the extrusion of thermoplastic resinous materials and, in particular, molten thermoplastic resin containing volatile blowing agent in admixture therewith, a seal is provided for an extruder to prevent escape or leakage therefrom of the molten thermoplastic resin-volatile blowing agent mixture.

3,785,761
APPARATUS IMPROVEMENTS IN A ROTARY BLOW MOLDING MACHINE

James C. Logomasini, Springfield, Mass., and Richard K. Shelby, Hinsdale, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 20, 1971, Ser. No. 182,074
Int. Cl. B29d 23/03
U.S. Cl. 425—387 B **4 Claims**

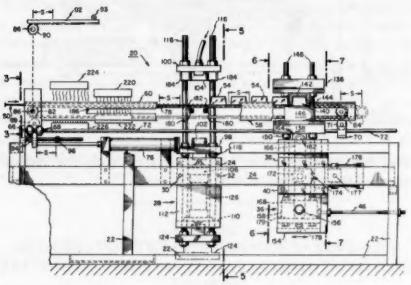


Improvements in a multi-station rotary blow molding machine wherein a number of partible blow molds angularly spaced from each other about a main shaft on supports extending out from the axis of the machine are opened and closed by means of a cam generally surrounding the periphery of the machine. A portion of this cam is in the form of a variable thickness rib along which roller followers associated with one section of each partible mold cammingly move on opposite sides thereof at least during closing of the molds. Spring means are preferably included between the axis of the machine and each inner mold section to absorb any unplanned movement of the molds in a direction radial to the machine axis.

3,785,762
UNIVERSAL THERMOPLASTIC SHEET FORMING APPARATUS

Robert L. Butzko, c/o Thermtrol Corp., 165 Holland Ave., Bridgeport, Conn.

Filed May 3, 1971, Ser. No. 139,632
Int. Cl. B29c *17/04*
U.S. Cl. 425—289 **22 Claims**



One or more heating stations, a dual action pressure-vacuum thermo-forming press, and a die-cutting press are located in line on a single machine. Thermoplastic sheet is fed from a supply roll under the heating stations and through the forming and cutting presses and then passed over a separating mechanism. Precise indexing of the thermo-formed parts from the forming press through the cutting press is provided by a pin chain carriage assembly. Pins on the chain engage the plastic sheet and hold it fixed with respect to the chain. The entire chain mechanism is mounted on a carriage which is reciprocated. When the carriage moves forward, parts are indexed from under the thermo-forming press to the first of one of more intermediate stations between it and the cutting press. When the carriage is reciprocated backwards, the chain is driven through a one-way clutch assembly such that the chain remains stationary with respect to the presses. Thus, on a subsequent reciprocation, the thermo-formed parts are precisely indexed in the cutting press. The cutting press is mounted on rails and may be positioned towards or away from the forming press to eliminate waste even when small parts are formed using single molds.

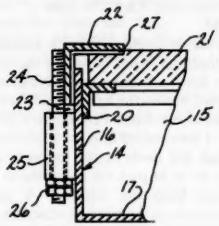
The thermo-forming press is provided with separate top and bottom platen-driving cylinders for universal adjustment of initial and final positions and strokes. The drive cylinders are mounted in a parallel battery below the top and bottom platens. Fixed parallel cold bars transverse to the carriage mechanism permit clamping of the sheet during thermo-forming. The cutting press is driven by a single cylinder through a toggle mechanism, providing a long down stroke on the top platen to engage the cutting die about the plastic parts in a self centering action prior to raising the lower platen against the parts to provide the cutting action.

3,785,763
INFRA-RED BURNER

Rudolph S. Bratko, 10706 Harvard Ave., Cleveland, Ohio

Filed Mar. 31, 1972, Ser. No. 239,951
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **6 Claims**

There is disclosed an infra-red burner particularly suitable for process lines in which higher temperatures of the burner are possible to be attained by a material which while intended as an insulating material in its ordinary and everyday common use, in fact provides improved thermal stability when used as a burner face member, density being such that it is permeable to

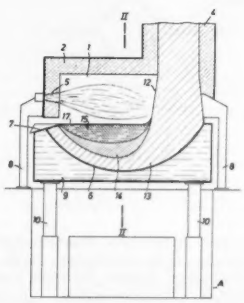


a gas/air mixture and yet the flame is retained exceptionally close to the surface, without flashback, a particularly important aspect of the construction resulting in the ability to modulate heat production and in fact make possible initiation and termination of such production nearly instantaneously.

3,785,764
CONTINUOUS MELTING OF VERY HIGH MELTING POINT MATERIALS

George Delacroix, Croissy sur Seine, and Lucien Beneytout, Martigues, both of France, assignors to Societe Anonyme, Paris, France

Filed Aug. 16, 1972, Ser. No. 281,180
Int. Cl. F27b *19/00*
U.S. Cl. 432—85 **5 Claims**



Furnace for continuous melting of very-high melting-point materials fitted with an adjustable feeding system, heated by gaseous or other fuel or electricity, and cooled such as to form on the inner side of the hearth a self-coating, and in which the said hearth is held at least partly in a bath of a liquid coolant such as water and vented to atmosphere and provided on the one hand, with means to keep the level of water constant, and on the other for feeding on the hearth the material to be processed in the shape of an evenly sloping batter, the liquid bath providing, among other things, proper cooling of the contact area between the roof of the furnace and the hearth.

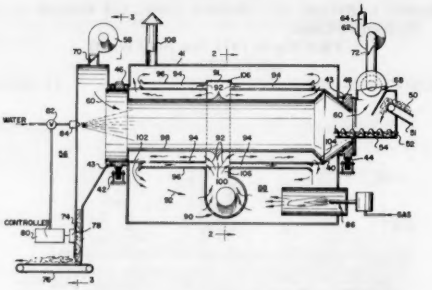
3,785,765

ROTARY TOBACCO DRYER

Lorne A. Rowell, Lachine, Quebec, and James H. Cartmell, Preville, Quebec, both of Canada, assignors to Imasco Limited, Montreal, Quebec, Canada

Filed Feb. 17, 1972, Ser. No. 227,693
Int. Cl. F27b *7/08*
U.S. Cl. 432—107 **9 Claims**

A tobacco dryer is disclosed which comprises a rotating substantially cylindrical drum in which the tobacco is dried. The drum has a first end and a second end and the tobacco which is to be dried enters the first end of the drum and leaves at the second end of the drum. Process air which has a low absolute humidity is introduced into the drum at the second end and flows through the drum in the opposite direction to the flow of tobacco, so as to pick up and remove from the drum, moisture released from the tobacco. A gas fired burner located within the dryer housing produces heating air. This heating air is forced over the exterior surfaces of the rotating drum at a velocity between 500 feet per minute and 3,500 feet per minute so as to increase the heat conductance through the rotating drum. In addition, the dryer is also provided with a controlled water spray which is introduced into the second end of the rotating drum and thereby controls the moisture content of the tobacco leaving the dryer.



CHEMICAL

3,785,766
PROCESS FOR DYEING POLYESTER TEXTILES WITH ANTHRAQUINONE DYESTUFFS BY THERMOFIXATION

Raouf Botros, Lock Haven, Pa., assignor to American Aniline Products, Inc., Paterson, N.J.

Filed Jan. 31, 1972, Ser. No. 222,361
Int. Cl. D06p *1/20, 3/82*
U.S. Cl. 8—21 C **10 Claims**

Anthraquinone dyes for dyeing polyester fabric are made by the reaction of an arylamine, such as aniline, with a dichlorochrysazin in which one of the chlorine atoms is in a non-peri position, the reaction being conducted in the presence of boric acid. This class of anthraquinone dyes, when appropriately dispersed, produces blue-green dyeings on aromatic polyester fabrics with excellent substantivity, outstanding sublimation fastness, and good fastness to light. The dyes are applied to polyesters, such as polyethylene terephthalate, preferably by thermofixation methods.

3,785,767
PROCESS FOR THE CONTINUOUS DYEING AND PRINTING OF FIBRE MATERIALS CONTAINING IONIC GROUPS

Dietrich Hildebrand, Odenthal, and Robert Kuth, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 10, 1970, Ser. No. 62,651
Claims priority, application Germany, Aug. 16, 1969, 1941698
Int. Cl. D06p *3/14*
U.S. Cl. 8—54 **8 Claims**

Pad-steaming process for the continuous dyeing and printing of fibre materials containing ionic groups, from organic solvents, characterised in that the fibre materials are dyed or printed with chlorinated hydrocarbon dyeing baths containing ionic dyestuffs which have been rendered soluble in chlorinated hydrocarbons by the formation of salts or addition products with lipophilic compounds.

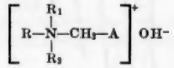
With the new process, it is possible to produce on fibre materials containing ionic groups strong, level and well developed dyeings and prints in excellent yields.

3,785,768
PROCESS FOR THE DYEING OF FIBRE MATERIAL CONSISTING OF POLYACRYLONITRILE OR ACRYLONITRILE-CONTAINING COPOLYMERS

Klaus Walz, Leverkusen; Klaus Gerlach, Cologne, and Max Schwarz, Berg.-Neukirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 10, 1971, Ser. No. 179,571
Claims priority, application Germany, Sept. 11, 1970, 2044990
Int. Cl. D06p *506, 3/76*
U.S. Cl. 8—169 **4 Claims**

Process for dyeing fibre materials consisting of polyacrylonitrile-containing copolymers with cationic dyestuffs in level and deep shades by using as dyeing auxiliaries quaternary ammonium salts which are derived from free ammonium bases of the formula



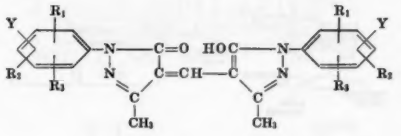
wherein the R's and A are as defined below.

3,785,769
POLYESTER FIBERS DYED WITH METHYLIDYNEBIS PYRAZOLONE DYESTUFFS

Edgar Earl Renfrew, Lock Haven, Pa., assignor to American Aniline Products, Inc., Paterson, N.J.

Filed Mar. 10, 1972, Ser. No. 233,707
Int. Cl. D06p *3/54*
U.S. Cl. 8—179 **3 Claims**

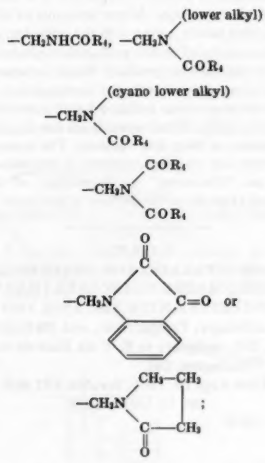
Dyestuffs for polyester and plastic substrates are provided by reacting a methylidynebis pyrazolone with an N-methylolamide. The dyestuffs have the formula



wherein

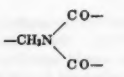
each of R_1, R_2 and R_3 is independently hydrogen, lower alkyl, chloro, bromo or lower alkoxy;

one Y is hydrogen and the other Y is



each R_4 is independently lower alkyl, chloro(lower alkyl), bromo(lower alkyl), cyano(lower alkyl), phenyl, chlorophenyl, bromophenyl, lower alkylphenyl, cyano(lower alkyl)phenyl, nitrophenyl, sulfamylphenyl, N,N-di(lower alkyl)sulfamylphenyl, N-(lower alkyl)sulfamylphenyl, lower alkylsulfonylphenyl, cyanophenyl, di(lower alkyl) carbamylphenyl or lower alkoxyphenyl; or

the two R_4 groups taken together with the adjacent

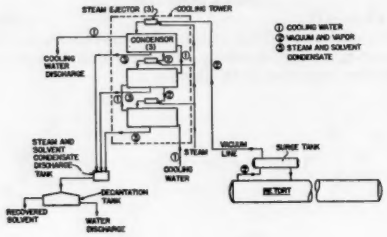


group form a heterocyclic group having five or six ring atoms.

3,785,770
PROCESS OF TREATING WOOD

Charles D. Hudson, Seattle, Wash., assignor to Wyckoff Company, Seattle, Wash.

Division of Ser. No. 41,140, May 25, 1970, Pat. No. 3,706,580.
This application Aug. 1, 1972, Ser. No. 276,932
Int. Cl. B27k *3/08, 3/40;* **B05c** *11/10*
U.S. Cl. 21—7 **6 Claims**

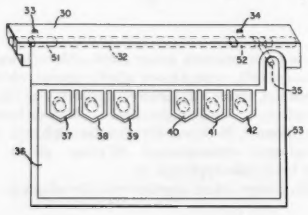


A wood preservative composition which substantially eliminates formation of pentachlorophenol crystals on the surface of the treated wood and results in increased paintability of the treated wood over compositions previously used consists of polypropylene glycol and a thermoplastic hydrocarbon resin derived from high temperature cracking of petroleum added to a solution of pentachlorophenol in a narrow boiling range mineral spirits solvent. Minor amounts of dioctylphthalate may be added which, along with the polypropylene glycol, prevent the formation of visible pentachlorophenol crystals on the surface of the treated product. Wood or other cellulosic materials are impregnated with the composition under pressure and the solvent carrier extracted and recovered from the wood before discharge of the wood from the treating chamber by a combination of heat and vacuum. The treated product, on removal from the treating chamber, is dry and clean to the touch with no "blooming" or formation of visible pentachlorophenol crystals on the surface of the wood.

3,785,771
METHOD AND APPARATUS FOR ANALYZING A LIQUID CONTAINING MACROMOLECULES THAT WOULD INTERFERE WITH THE ANALYSIS

Wayne W. Luchsinger, Tempe, Ariz., and Richard G. Nadeau, Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 19, 1969, Ser. No. 851,409
Int. Cl. G01n *31/04*
U.S. Cl. 23—230 R **12 Claims**

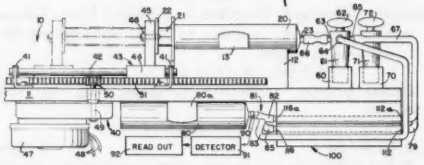


A method and apparatus for analyzing a liquid for a particular constituent when the liquid contains charged macromolecules that would interfere with the analysis. The method comprises forcing the liquid through an ion exchange medium into a reaction chamber in a manner such that substantially all of the liquid passes through the ion exchange medium and determining the presence of said particular constituent. The ion exchange medium is adapted to remove substantially all of at least one type of charged macromolecule from the liquid without removing substantially any of the particular constituent. Normally at least one reagent reactive with said particular constituent must be introduced into the liquid before the determination is made. Positively or negatively charged macromolecules, or both, can be removed from the liquid by using positive or negative ion exchange resins, or combinations thereof, as the ion exchange medium. The process is particularly effective for removal of dipolar ions, especially protein molecules, whose charge depends on the pH of the medium in which they are found. The charge on the macromolecule can then be adjusted so that the ion exchange medium can selectively remove the macromolecule without removing any of the particular constituent.

3,785,772
BLOOD ANALYZER

John C. Coggeshall, Des Plaines, Ill., assignor to Milroy R. Blowitz; Max Pastin and Magnor, Inc., Chicago, Ill., part interest to each

Continuation of Ser. No. 4,983, Jan. 22, 1970, abandoned.
This application Dec. 8, 1971, Ser. No. 206,131
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 23—253 R **4 Claims**

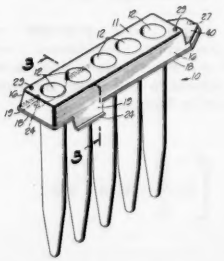


A pair of syringes respectively coupled by way of a pair of three-way valves to a source of blood and a source of reagent, so that withdrawing the plungers fills the syringes respectively with blood and reagent. The three-way valves are switched and a motor mechanism is activated simultaneously to move the plungers into the syringes to move the blood and the reagent through a pair of chambers separated by a semipermeable membrane. A selected substance in the blood is dialyzed through the membrane and reacts with the reagent to furnish a product, the concentration of which is measured to determine the concentration of the selected substance in the blood.

3,785,773
CHEMICAL ANALYSIS TUBE MODULE

Donald G. Rohrbaugh, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 2, 1972, Ser. No. 231,350
Int. Cl. G01n *1/10, 1/14, 1/18*
U.S. Cl. 23—253 R **8 Claims**



An integral, thin wall thermoplastic chemical analysis tube module has a plurality of test tubular receptacles disposed

normally to an elongated rectangular planar area and has a surrounding first wall frame segment of uniform height secured to and supportively disposed around a perimeter major segment of the planar area. A first uniform stiffener lip is integrally secured to and disposed around the first frame segment opposite the planar area. An opposed pair of second wall frame segments having a second uniform height is secured to and supportively oppositely disposed around a pair of opposed perimeter minor segments of the planar area. The second wall height is precisely greater than the first wall height. A pair of second uniform stiffener lips is secured to and disposed around the second frame segment perimeter, also opposed to the planar area. The temporary compressive displacement of the second pair of stiffener lips inside the perimeter of the first pair of stiffener lips provides an expansive precise jaw clamp on release of the clamp, which can secure the tube module combination in a configured cut out aperture in a supporting plate.

3,785,774

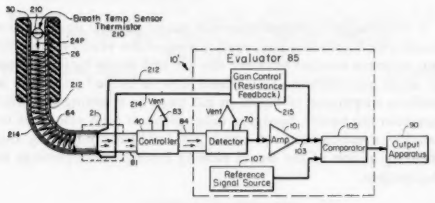
BREATH TESTING SYSTEM WITH BREATH TEMPERATURE SENSOR

John E. Murphy, Skokie, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 154,381, June 18, 1971, abandoned. This application July 24, 1972, Ser. No. 274,712

Int. Cl. G01n *33/16*

U.S. Cl. 23—254 E **9 Claims**



An improvement in alcohol breath testing system wherein a breath temperature sensor is included in the breath input unit and means responsive to the sensor for altering the performance of the system.

3,785,775

PLANT FOR CONTINUOUS PRODUCTION OF CELLULOSE TRIACETATE IN A HETEROGENEOUS PHASE

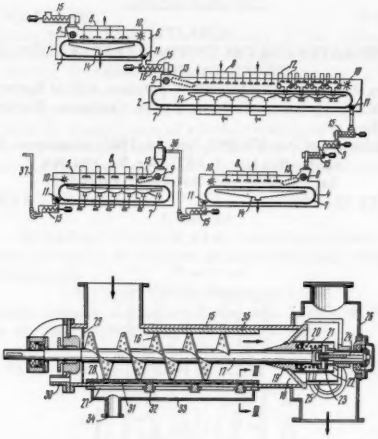
Fedor Mikhailovich Mikhalsky, Zanevsky prospekt, 13, kv. 8; Artemy Mikhailovich Gaspariants, ulitsa Tukhachevskogo, 37, kv. 84; Jury Nikolaevich Purlov, prospektmorisa Toreza, 108, kv. 37, all of Leningrad; Pavel Ivanovich Kulesh, ulitsa Schedrina, 2, kv. 12, Shostka Sumskoi oblasti; Pavel Petrovich Rudenko, ulitsa Krasnaya, 200, kv. 24; Alexei Nikolaevich Ryabtsev, ulitsa Zakharova, 16, kv. 7, both of Krasnodar, all of U.S.S.R.; Yakov Efimovich Levi, deceased, late of Moscow, U.S.S.R., and Mina Neukhovna Levi, administratrix, Belyaevo-Bogorodskoe, kvartal 45, korpus 22, kv. 26, Moscow, U.S.S.R.

Filed July 19, 1971, Ser. No. 163,700

Int. Cl. B01j *3/02, 4/00;* C08l *7/02*

U.S. Cl. 23—260 **1 Claim**

A plant for continuous production of cellulose triacetate in a heterogeneous phase, comprising consecutively arranged apparatus for activating, acetylation and benzene washings, benzene stripping, partial saponification, water washings and final product drying. The apparatus for activating, the apparatus for acetylation and benzene washings, the apparatus for benzene stripping and the partial saponification apparatus are interconnected by connecting adaptors for conveying the fibrous reaction mass from one apparatus to another and provided with means for creating therein a sealing plug from the



conveyed reaction mass. Said means for the creation of the sealing plug is in the form of a screw conveyer with a valve arranged at its discharge orifice and spring-loaded in the direction opposite to the direction of the fibrous reaction mass conveying.

3,785,776

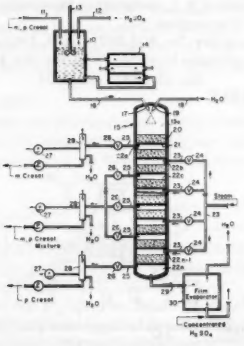
APPARATUS FOR CONTINUOUS LIQUID PHASE SEPARATION

Barrymore T. Larkin, Middlesex Township, Butler County, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 17, 1972, Ser. No. 218,252

Int. Cl. B01d *11/04, 3/22*

U.S. Cl. 23—267 R **4 Claims**



An apparaus for continuous liquid phase separation, particularly of meta and para cresol, having a desulfonation column in which a plurality of fixed beds are positioned along its length and separated by plenums. Alternative plenums are

connected to a source of steam and the plenums not so connected are connected with vapor withdrawal means. A sulfonator is provided to supply feedstock to the column at its top and thin film evaporator provided to concentrate sulfuric acid produced in the column for reuse in the sulfonator. The withdrawal means including condensing means for the separation of water from the volatilized fractions.

3,785,777

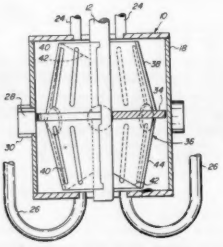
APPARATUS FOR THE UNIFORM PREPARATION OF SILVER HALIDE GRAINS

Henry D. Porter, and Benjamin A. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 876,893, Nov. 14, 1969, abandoned. This application Nov. 1, 1971, Ser. No. 194,466

Int. Cl. B01f *3/08*; **B01d** *9/02*; **C01g** *5/00*

U.S. Cl. 23—271 **4 Claims**



An apparatus for its practice are disclosed where, uniformly sized silver halide grains are precipitated in an aqueous peptizer solution by the reaction of a silver salt solution with a halide salt solution, where at least one of the solutions has been mixed with a portion of the peptizer solution prior to its reaction with the other solution within the remainder of the peptizer solution. Apparatus is disclosed for practicing the method of this invention including at least one separate mixing chamber for dilution of a salt solution with a portion of the peptizer solution prior to the precipitation reaction.

3,785,778

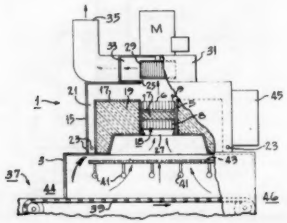
SMOKE ELIMINATING DEVICE

Norman Burstein, Cherry Hill, and Richard C. Ditzler, Cinnaminson, both of N.J., assignors to Smokontrol Corporation of America, Pennsauken, N.J.

Continuation of Ser. No. 865,002, Oct. 9, 1969, abandoned. This application Mar. 23, 1971, Ser. No. 127,349

Int. Cl. B01j *7/00, 9/04*

U.S. Cl. 23—288 F **13 Claims**



For eliminating combustible, carbon containing vapors or smoke, there is provided a device having an inlet hood capable of collecting smoke from a broiler or other cooker. The device has an outlet and a passageway between the hood and the outlet. In this passageway is a cellular, catalyst-coated refractory block threaded with high resistance electrical wire for heating the block cells. An impeller associated with the passageway draws the vapors through the heated block cells for combustion of the vapors and then forces them on through the outlet.

3,785,779

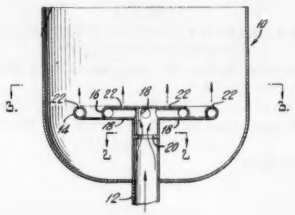
GAS LIQUID INLET DISTRIBUTOR

Sik U. Li, Morris Township, Morris County, and Robert M. Koros, Westfield, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Aug. 2, 1971, Ser. No. 168,269

Int. Cl. B05b *7/04*; **B01j** *1/00*

U.S. Cl. 23—284 **4 Claims**



A distributor for introduction of mixed gas and liquid into a vessel which provides improved mixing of the vessel's contents and intimate contact between the gas and liquid by formation of small gas bubbles. Two phase flow is baffled to assure a uniform dispersion of liquid in gas prior to sparging the mixture into the vessel. Sparging takes place at high velocities to provide a multiplicity of small gas bubbles created by the shearing action of the liquid passing through the openings in the sparger.

3,785,780

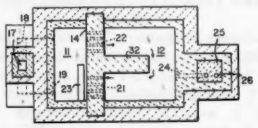
REACTION VESSEL

Newton N. Teichmann; Chancey D. McKenna, both of Bethel Park, and Albert Garrone, Canonsburg, all of Pa., assignors to Henry F. Teichmann, Inc., Pittsburgh, Pa.

Filed Oct. 5, 1972, Ser. No. 295,169

Int. Cl. B01d *53/34*

U.S. Cl. 23—285 **6 Claims**



The reaction vessel accommodates a corrosive liquid bath such as molten carbonate and a reactant such as petroleum coke and air. The vessel includes an oxidation chamber and a reduction chamber separated by a tee-shaped baffle. A liquid level control chamber cooperates with the reduction chamber and also serves as the outlet. Orifices extend through the baffle so that there is a controlled flow and recirculation of the bath through the chambers. The reactant is injected into the oxidation chamber below the level of the bath. The vessel is lined with a refractory brick or block, an insulating refractory sealant, and sections of expanded metal or metal grating.

3,785,781

APPARATUS FOR CATALYTICALLY CONVERTING FLUID

George L. Hervert, Woodstock; Robert D. Carnahan, Barrington, and Karl J. Youtsey, Chicago, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 4, 1971, Ser. No. 186,126
Int. Cl. B01j 9/04
U.S. Cl. 23—288 F 3 Claims

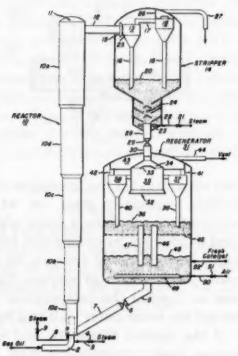
Method and means of catalytically converting fluids such as exhaust gases. The fluid is passed through a catalytically active first skeletal material zone having a plurality of flow paths in the direction of flow of predetermined cross-sectional dimensions. Immediately after withdrawing the fluid from the first skeletal material zone, the fluid is passed through an adjacent second skeletal zone having a plurality of flow paths in the direction of flow of larger cross-sectional dimensions than the flow paths of the first skeletal material zone. Immediately after withdrawing the fluid from the second zone the fluid is passed through an adjacent catalytically active third zone of skeletal material having flow paths in the direction of flow of smaller cross-sectional dimensions than the flow paths of the second zone.

3,785,782

CATALYTIC PETROLEUM CONVERSION APPARATUS

Robert R. Cartmell, Crown Point, Ind., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 5,777, Jan. 26, 1970, Pat. No. 3,661,799. This application Dec. 8, 1971, Ser. No. 206,214
Int. Cl. B01j 9/20
U.S. Cl. 23—288 S 3 Claims



Catalytic conversion of petroleum feedstocks, such as the cracking of a gas oil in a vertical transport reactor, is improved by effecting rapid separation of catalyst from reactor effluent and re-generating catalyst in a multi-stage fluid-bed system. A higher yield of desirable petroleum products and a lower carbon level on spent catalyst are realized. Partial regeneration of spent catalyst is effected in a first dilute-phase regeneration state, permitting subsequent use of a high regeneration temperature in order to reach an acceptably low carbon level on regenerated catalyst without harm to sensitive con-version catalysts.

3,785,783

RUTHENIUM OR OSMIUM ON HARD METAL

Brian Arthur Mynard, Bromsgrove; Bryan Jones; Victor Allen Tracey, both of Solihull, and Walter Betteridge, Beckenham, all of England, assignors to International Nickel Company, Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,889
Int. Cl. B22f 1/00
U.S. Cl. 29—182.7 5 Claims

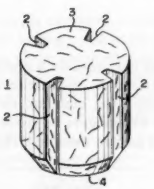
Bodies having osmium or ruthenium at the surface are found to give improved service as cutting tools, dies, bearings and the like. Best results are obtained when the body consists of a hard metal consisting of a carbide and a cobalt binder, and osmium or ruthenium is caused to combine with the bonding metal by interdiffusion of a surface coating of the precious metal and underlying bonding metal or by using mixtures of cobalt and osmium or ruthenium or both as the bonding metal.

3,785,784

SCRAP BLOCKS FOR ELECTRIC FURNACES

Kunitoshi Tezuka, 34 7-chome, Minamisuna-machi, Koto-ku, Tokyo, Japan

Filed Dec. 12, 1966, Ser. No. 601,034
Claims priority, application Japan, Sept. 3, 1966, 41/57944; Sept. 10, 1966, 41/59632; Sept. 30, 1966, 41/64315
Int. Cl. B21c 37/00
U.S. Cl. 29—186 11 Claims



A metal scrap block for use in electric furnaces is of substantially cylindrical configuration and provided in its outer circumferential surface with angularly spaced longitudinal grooves which extend radially inwardly by between about ⅛ and ¼ of the block diameter.

3,785,785

SOLID SURFACE LUBRICANT COATING

James O. Hodshire, Mooresville; Quentin O. Shockley, Indianapolis, and Don E. Crouse, Plainfield, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1972, Ser. No. 237,950
Int. Cl. C10m 7/00
U.S. Cl. 29—195 Y 6 Claims

Metal articles are provided with a heat resistant, wear and abrasion resistant, antiseizing, solid surface lubricant coating consisting essentially of the combination of silver and niobium di-telluride.

3,785,786

WELDED AUSTENITIC NICKEL CHROMIUM STEELS

Jean-Jacques De Cadenet, Ugine, France, assignor to Ugine Aciers, Paris, France

Division of Ser. No. 13,757, Feb. 24, 1970, Pat. No. 3,693,247, which is a continuation-in-part of Ser. No. 608,971, Jan. 13, 1967, abandoned. This application June 9, 1972, Ser. No. 261,390
Int. Cl. B32b 15/00
U.S. Cl. 29—196.1 5 Claims

Weld deposits joining nickel-chrome austenitic steels, a method of making the weld deposits and filler metals yielding

such weld deposits which have the general composition in per cent by weight of carbon 0.06 to 0.12, chromium 15 to 20, nickel 7.5 to 13, tungsten 3.5 to 5, manganese 0.5 to 2, silicon ≤ 0.6 and nitrogen (N_2) ≤ 0.10, and a ferritic tendency index of less than or equal to 15.

3,785,787

STAINLESS STEEL WITH HIGH RESISTANCE AGAINST CORROSION AND WELDING CRACKS

Kozo Yokota; Yukishige Fukase, and Koichiro Osozawa, all of Yokohama, Japan, assignors to Nippon Yakin Kogyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 22,173, March 24, 1970, abandoned. This application Oct. 6, 1972, Ser. No. 295,733

Int. Cl. B32b *15/00*; **C22c** *39/20*

U.S. Cl. 29—196.1 **14 Claims**

Stainless steel with high resistance against corrosion and welding cracks, consisting of carbon, silicon, manganese, nickel, chromium, copper and the remainder of iron with an inevitable amount of impurity. The contents of the aforesaid ingredient elements of the stainless steel are so related with each other that the value of the following austenite/ferrite ratio is kept equal to or less than 1.06.

$$\text{austenite/ferrite ratio} = \frac{\text{Ni}(\%) + 0.5\text{Mn}(\%) + 30\text{C}(\%) + 2}{\text{Cr}(\%) + 1.5\text{Si}(\%) - 5.6}$$

The stainless steel may contain a limited amount of molybdenum, niobium, titanium, and tantalum, with a modified austenite/ferrite ratio. The stainless steel is advantageously used to make heat exchangers in processes employing automatic tungsten inert gas arc welding techniques.

3,785,788

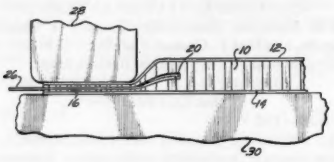
METHOD OF FORMING HONEYCOMB PANEL EDGES

Marvin D. Haggberg, Los Alamitos; Ira K. Kavanagh, Fullerton, and Leonard R. Van Horik, Long Beach, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 3, 1972, Ser. No. 303,484

Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **4 Claims**



A method of contour-forming the edge of honeycomb sandwich panel comprising the steps of cutting a slit through the edge portion of the honeycomb midway between and parallel to the outer sheets of the sandwich, inserting a hardened blade into the slit, crushing the honeycomb core and thereafter removing the blade prior to the stretch-forming operation. This provides a bearing surface between the cells attached to the inner and outer panel sheets which permits the outer sheet to act independently of the inner sheet and thus form to contour satisfactorily in the subsequent stretch-forming step. In the alternative when crushing is not desired the blade is left in the slit during the stretch-forming operation to provide the slip surface between the inner and outer sheets.

3,785,789

FUEL DETERGENTS

Lewis R. Honnen, Petaluma, and Marvin D. Coon, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 24, 1972, Ser. No. 256,289

Int. Cl. C101 *1/22*

U.S. Cl. 44—66 **16 Claims**

The reaction products of hydrocarbon polyamines having a long, substantially aliphatic, hydrocarbon chain bonded to a di- or higher polyamine with certain polyfunctional coupling agents find use as detergents in distillate fuel compositions. The hydrocarbon group is normally branched chain and derived from natural sources or polyolefins, substantially free of aromatic substitution and of about 420 to 10,000 molecular weight. The poly-functional coupling agents are certain polyhalides, polycarboxylic acids, and organic polyisocyanates.

3,785,790

HYDROCARBON FUEL COMPOSITIONS

Aart Strang, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,723

Claims priority, application Great Britain, Dec. 30, 1970, 61769/70

Int. Cl. C101 *1/26*

U.S. Cl. 44—66 **4 Claims**

Liquid hydrocarbon distillate fuel compositions, especially gasolines, containing mineral and organic acid salts of hydrocarbyl polyamides effectively nullify and/or inhibit fouling of vital parts of internal combustion engines.

3,785,791

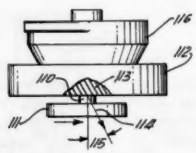
FORMING UNIT FOR FINE MINERAL FIBERS

Walter Merton Perry, 76 Locust Hill Rd., Darien, Conn.

Filed Mar. 2, 1972, Ser. No. 231,347

Int. Cl. C03b *37/04*

U.S. Cl. 65—14 **14 Claims**

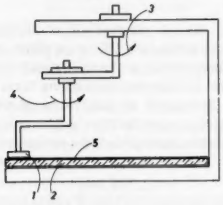


An improved apparatus for the formation of fine fibers from mineral materials, especially glass, in which the molten material feeds continuously into a rotor which is turning at high speed, and discharges by centrifugal force thru multiple orifices arranged in superposed rows in the outer peripheral wall of the rotor in the form of molten filaments, with hot gaseous means to control the temperature of the zone immediately beyond the rotor outer wall and hold it close to the temperature of the molten filaments, and with a secondary outer attenuation zone comprising a high velocity annular gaseous blast for further attenuating the filaments into fine fibers, and with the gaseous blast composed of multiple individual jets spaced closely together, and so angled that the elements of the blast have a component of their velocity tangential to the rotor outer wall, and moving preferably in the same direction as the outer wall movement. The advantage of this combination is that it produces longer and finer fibers, and with less twisting together than is possible with the means used heretofore. Additional objectives are improved means to control the temperatures in the rotor, reduction of rotor windage, and reduction in the amount of power required to compress the medium used for the outer gaseous blast by reason of more efficient blast nozzles.

3,785,792
SURFACE COATING OF CHEMICALLY TEMPERED VITREOUS BODIES

Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermadel-Boitsfort, Belgium

Filed Sept. 9, 1969, Ser. No. 856,273
Claims priority, application Luxembourg, Sept. 12, 1968, 56869; Great Britain, June 25, 1969, 32148/69
Int. Cl. C03c *17/00, 21/00*
U.S. Cl. 65—30 **28 Claims**



A method for improving the adherence and uniformity of a coating layer on a body of vitreous or vitrocrystalline material by chemically tempering the body so as to impart compressive surface stresses to the surface to be coated before the coating layer is applied, and articles produced in such a manner.

3,785,793
METHOD OF LEACHING HIGH SILICA GLASS HAVING 0.5–2.0% P_2O_5

Yong Wan Park, Seoul, South Korea, assignor to National Industrial Research Institute, Seoul, South Korea

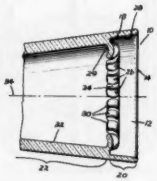
Filed May 26, 1972, Ser. No. 257,383
Claims priority, application South Korea, May 31, 1971, 746
Int. Cl. C03c *15/00*
U.S. Cl. 65—31 **6 Claims**

The addition of small controlled amounts of P_2O_5 to a borosilicate glass improves the speed and homogenity of phase separation upon heating of the glass. A borosilicate glass of the formula 65–75 percent SiO_2, 15–25% B_2O_3, 5–10% R_2O and 0.5–2.0% P_2O_5, wherein R is Na, K or Li, is heated and undergoes phase separation into a silica rich phase and an acid soluble $R_2O - B_2O_3 - P_2O_5$ phase. The acid soluble phase is leached with acid to form a porous high silica glass which can be reheated at about 1,200°C to contract the glass thereby yielding a transparent nonporous glass of properties similar to quartz glass.

3,785,794
METHOD FOR FORMING A DRINKING RECEPTACLE

Frederick R. Hodges, 520 N. Michigan Ave., Chicago, Ill.

Division of Ser. No. 48,162, June 22, 1970, Pat. No. 3,666,110. This application May 30, 1972, Ser. No. 257,960
Int. Cl. C03b *21/00*
U.S. Cl. 65—108 **6 Claims**

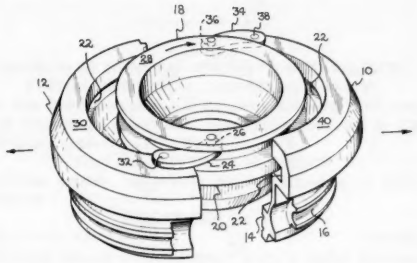


A method for forming a drinking receptacle having means for maintaining ice, fruit, and the like within the receptacle and spaced from the rim thereof during use including the steps of forming the receptacle with the guard in a first position, and then, moving the guard into a second position in which it is used.

3,785,795
APPARATUS FOR POSITIVELY CENTERING A GLASS FORMING THIMBLE

Robert D. Colchagoff, Toledo, Ohio. assignor to Owens-Illinois Inc., Toledo, Ohio

Filed July 12, 1972, Ser. No. 271,079
Int. Cl. C03b *11/00, 9/40*
U.S. Cl. 65—307 **10 Claims**

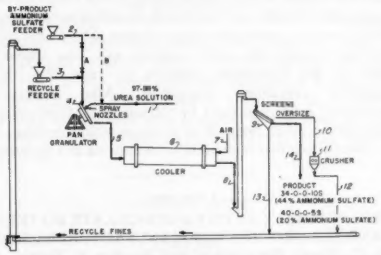


Apparatus for positively centering a glass forming thimble. The thimble in a glass forming operation is used to form the extreme upper portion of the finish of a glass container. In this invention, the thimble is connected to the two neck ring halves within which it is positioned. This assures that the thimble will always be positively centered with respect to the neck ring halves when they are opened.

3,785,796
PRODUCTION OF UREA-AMMONIUM SULFATE

Horace C. Mann, Jr., Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 155,133, June 21, 1971. This application Jan. 27, 1972, Ser. No. 221,262
Int. Cl. C05c *9/00*
U.S. Cl. 71—28 **1 Claim**



FLOW DIAGRAM OF GRANULATION PILOT PLANT FOR PRODUCTION OF UREA-AMMONIUM SULFATE

A process for the production of urea-ammonium sulfate granules from urea and ammonium sulfate by several granulation methods. The proportion of ammonium sulfate in the mixture was varied from 15 percent to 70 percent by weight resulting in products containing from 42 percent to 29 percent N and 3 percent to 17 percent S, respectively. Unexpectedly, the urea-ammonium sulfate mixture in these proportions were fluid enough at 250° F. to 325° F. to be prilled and granulated. The presence of the ammonium sulfate increased the strength of the granules significantly.

3,785,797

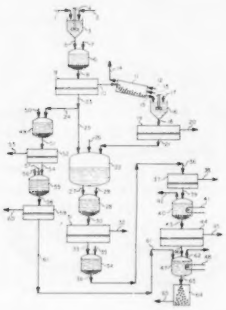
PRODUCTION OF NITROPHOSPHATE FERTILIZER

Samuel Strelzoff, New York, N.Y., and Sydney Atkin, Springfield, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Continuation of Ser. No. 85,956, Nov. 2, 1970, abandoned, which is a division of Ser. No. 766,139, Oct. 9, 1968, Pat. No. 3,582,313. This application Sept. 5, 1972, Ser. No. 286,444

Int. Cl. C05b *11/06*

U.S. Cl. 71—39 2 Claims



Nitrophosphate fertilizer is produced by the nitric acid digestion of phosphate rock. The pH of the initial digestion solution is raised to the range of about 1.8 to 2.5 by ammonia addition, to precipitate impurities including a major portion of fluoride and iron phosphate. The solid precipitate is filtered from the clear solution, and the solid filter cake is calcined at elevated temperature to volatilize fluorine and decompose iron phosphate into a nitric acid-insoluble form. The calcined cake is digested with nitric acid to recover phosphate and aluminum values in solution, and the resulting slurry is filtered and the solid filter cake containing iron compounds and silica is discarded. The clear filtrate is combined with the initial clear solution previously formed by filtration to remove solid fluoride and iron impurities, and the combined solution is preferably further acidified to reduce the PH to a low and highly acid value. A soluble salt such as ammonium sulfate or potassium sulfate, which has an anion which forms an insoluble solid salt with the calcium cation, is added to the combined solution, and an insoluble solid calcium salt is precipitated. Filtration removes the solid calcium salt, and ammonia is added to the remaining solution to raise the pH and precipitate remaining impurities. After removal of precipitated solid impurities by filtration, the final solution is processed by water removal to produce solid nitrophos fertilizer, usually together with ammonium nitrate as a co-product.

3,785,798

BIOLOGICALLY ACTIVE PARTICULATE MATERIAL AND THE PROCESS FOR MANUFACTURING SAME

John C. Horai, Hagerstown, and Stephen F. Tucker, Clear Spring, both of Md., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 633,718, April 26, 1967, Pat. No. 3,560,196. This application Oct. 19, 1970, Ser. No. 82,160The portion of the term of this patent subsequent to Feb. 2, 1988, has been disclaimed.

Int. Cl. A01n *9/00*

U.S. Cl. 71—79 6 Claims

Biologically active particulate material capable of releasing a biochemical at a controlled rate due to the change of environmental conditions, is manufactured by coating granules in the range of 10 to 50 mesh with a biochemical and a silicate binder and thereafter partially insolubilizing the binder.

3,785,799

HERBICIDAL COMPOSITIONS CONTAINING 2-(2',6'-DICHLOROPHENYL)-1,3-THIAZINE-4-ONE AND METHODS OF EMPLOYING THE SAME

Jasper Daams, and Kobus Wellinga, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 43,194, June 3, 1970, Pat. No. 3,661,900. This application Nov. 15, 1971, Ser. No. 198,999

Claims priority, application Netherlands, June 4, 1969, 6908457

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 2 Claims

It has been found that 2-(2',6'-dichlorophenyl)-1,3-thiazine-4-one has a biocidal effect on plants and their seeds. An interesting feature is that the said novel substance has not only a good initial activity but also a long-term activity. Selective use of the substance in cultivated plants having roots which penetrate to a comparatively great depth is possible. Thus, no appreciable damage is done to the cultivated plants.

3,785,800

NEW SUBSTITUTED PYRIMIDINE

Daniel Bertin, Montrouge; Jacques Perronnet, and Andre Teche, both of Paris, all of France, assignors to Roussel UCLAF, Paris, France

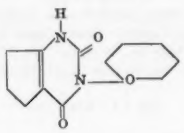
Division of Ser. No. 3,499, Jan. 16, 1970, Pat. No. 3,658,819. This application Oct. 8, 1971, Ser. No. 187,914

Claims priority, application France, Jan. 21, 1969, 69010011

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 2 Claims

A new substituted pyrimidine, of formula I:



(I)

compositions containing the same, process and method.

The compound I possesses pesticidal, particularly herbicidal properties.

3,785,801

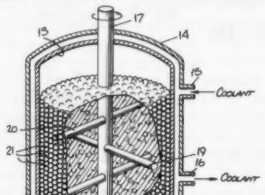
CONSOLIDATED COMPOSITE MATERIALS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation of Ser. No. 849,133, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 709,700, March 1, 1968, Pat. No. 3,591,362. This application Aug. 6, 1971, Ser. No. 169,791

Int. Cl. B22f *9/00*

U.S. Cl. 75—0.5 BC 3 Claims



Directed to the powder metallurgy production of consolidated metal products wherein the starting material com-

prises dense wrought particles containing at least 15 percent by volume of a compressively deformable metal with the remainder being one or more other metals or non-metals with the internal structure of the particles being non-porous and with the constituents thereof being intimately united and interdispersed, i.e., mechanically alloyed, said particles, upon consolidation, yielding metal or cermet products having unusual properties and capable of compositioinal characteristics not available as a result of other processing techniques.

3,785,802

METHOD FOR EXTRACTING AND SEPARATING IRON AND NON-FERROUS METALS, FROM FERROUS MATERIALS

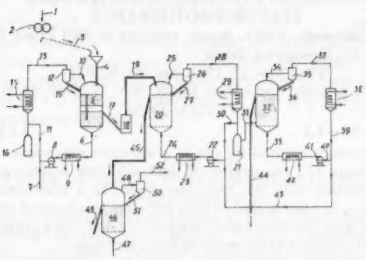
Giorgio Roberti, Rome; Casimiro Dufour-Berte, Genoa, and Edoardo Pasero, Rome, all of Italy, assignors to Centro Sperimental Metallurgico S.p.A., Rome, Italy

Filed Jan. 18, 1971, Ser. No. 106,962

Claims priority, application Italy, Jan. 19, 1970, 12431/70

Int. Cl. C21b *15/04*

U.S. Cl. 75—26 **9 Claims**



The invention consists in a method for extracting and separating iron from non-ferrous metals from ferrous ores and similar ferrous materials of such a pyrite ashes and/or purple ores, powders recovered from the steelmaking oxygen converter fumes and the like. The method comprising a first step wherein the material is reduced to an iron sponge preferably by means of hydrogen and similar reducing gases; a second step wherein said iron sponge is treated with carbon monoxide so as to obtain ferrocarbonyl vapors and a carbonylation solid residue with a higher concentration of non-ferrous metals; a third step consisting in the treatment of the ferrocarbonyl vapors on one side and then of the carbonylation solid residue; wherein the ferrocarbonyl vapors are condensed and then dissociated into pure iron powder and carbon monoxide which is used again in said second step, and wherein the residual carbonylation solid is treated to extract and recover the non ferrous metals contained therein.

3,785,803

EXTRACTION OF MERCURY FROM ALKALINE BRINES

Fletcher L. Moore, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 1, 1972, Ser. No. 231,029

Int. Cl. C22b *43/00*

U.S. Cl. 75—121 **2 Claims**

This invention is for a method of quantitatively removing mercury from aqueous waste streams with certain selected liquid organic amines. The method in its preferred form is particularly appropriate for removing mercury from aqueous brine solutions. Efficient and quantitative recovery of the extracted mercury is also provided.

3,785,804

STEEL ALLOY

Thomas Watmough, Dolton, and Robert P. O'Shea, Lombard, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,281

Int. Cl. C22c *39/26;* **F42b** *13/48*

U.S. Cl. 75—126 D **4 Claims**

A low alloy steel having titanium as an essential alloying ingredient. The titanium addition provides the means for controlling and manipulating the fragment mass distribution characteristics emanating from the detonation of an explosive warhead fabricated from the titanium containing steel alloy.

3,785,805

METHOD OF MANUFACTURING FORMED OBJECTS FROM A CHROMIUM-CARBON-IRON ALLOY

Jan Van Den Boomgaard, and Lodewijk Reinaerd Wolff, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,477

Claims priority, application Netherlands, Apr. 3, 1970, 7004761

Int. Cl. C22c *39/14*

U.S. Cl. 75—130.5 **2 Claims**

Formed objects of high strength even at higher temperatures are obtained by unidirectional solidification of an iron-chromium-carbon alloy in a given range of compositions around a straight line in the triangular phase diagram connecting points representing the compositions chromium 15 percent by weight, carbon 4 percent by weight, remainde. iron and chromium 30.5 percent by weight, carbon 2.96 percent by weight, remainder iron.

3,785,806

METHOD OF PRODUCING ARSENIC SELENIDES AND ARSENIC DOPED SELENIUM

Sten Tycho Henriksson, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 28, 1972, Ser. No. 229,956

Claims priority, application Sweden, Mar. 12, 1971, 3226/71

Int. Cl. C22c *1/10*

U.S. Cl. 75—134 H **7 Claims**

A process for producing arsenic doped selenium. Finely divided selenium is mixed with a finely divided arsenic in an atomic ratio of 1:4, whereafter the mixture is heated in an inert atmosphere to obtain a master alloy. The master alloy is then mixed with molten pure selenium in a manner to obtain an arsenic content of between 0.1 and 2 percent by weight in the selenium.

3,785,807

METHOD FOR PRODUCING A MASTER ALLOY FOR USE IN ALUMINUM CASTING PROCESSES

Stig Lennart Backerud, Akersberga, Sweden, assignor to Granges Aluminium AB, Kubikenborg, Fack, Sundsvall, Sweden

Filed Apr. 27, 1971, Ser. No. 137,986

Claims priority, application Sweden, Apr. 28, 1970, 5881/70

Int. Cl. C22c *1/02*

U.S. Cl. 75—138 **9 Claims**

A method for producing a master alloy for use in aluminum casting processes in which an aluminum melt containing 0.02–6 percent by weight titanium and 0.01–2 percent by weight boron is produced under conditions under which the

boron is bound to titanium in the form of titanium diboride, whereafter the melt containing titanium diboride is held under agitation at a temperature ranging from the melting point of the material to 900° C for a period of at least 15 minutes and at most 9 hours.

3,785,808

PERMANENT MAGNET ALLOY USING MOLYBDENUM

Robert Steinitz, Montclair, N.J., assignor to Wilbur B. Driver Company, Newark, N.J.

Continuation of Ser. No. 82,501, Oct. 20, 1970, abandoned. This application Feb. 8, 1972, Ser. No. 224,613

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **4 Claims**

A semihard permanent magnet alloy characterized by relatively high coercive force, relatively high residual induction, high ductility and low magnetostriction and consisting essentially of cobalt, iron and molybdenum. The molybdenum content of this alloy, as expressed in percent by weight, falls within the approximate range 2 percent – 15 percent. The sum of the cobalt and iron falls within the approximate range 85 percent – 98 percent. The ratio by weight of cobalt to iron falls within the approximate range 6.5:1 to 7.5:1.

3,785,809

NICKEL-BASE SUPERALLOY

Arthur R. Cox, Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 15, 1971, Ser. No. 153,444

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **2 Claims**

A cast, precipitation-hardening alloy, applicable to turbine blades and vanes operating in the 1,200°—1,900° F. temperature range, of a nominal composition, by weight, of 9.5 percent chromium, 10 percent cobalt, 2.5 percent molybdenum, 3.7 percent tungsten, 4.2 percent titanium, 5.2 percent aluminum, 1 percent vanadium, 0.015 percent boron, 0.06 percent zirconium, balance nickel.

The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,785,810

SILVER-METAL OXIDE COMPOSITE AND METHOD OF MANUFACTURING THE SAME

Eugen Emil Durrwachter, Savosa/Ticino, Switzerland; Ulf Harmsen, and Wilhelm Merl, both of Pforzheim, Germany, assignors to Dr. Eugen Durrwachter DODUCO, Pforzheim, Germany

Filed Dec. 22, 1971, Ser. No. 211,038

Claims priority, application Germany, Mar. 3, 1970, 2011002

Int. Cl. C22c *5/00*

U.S. Cl. 75—173 A **10 Claims**

The composite comprises a silver matrix having grain boundaries and metal oxide grains enriched at said grain boundaries of said silver matrix. An alloy is provided, which comprises silver, a second metallic component, and at least two alloying metals selected from the class consisting of calcium, antimony, magnesium, beryllium, aluminum, tin, manganese, and zirconium. Said second metallic component and said alloying metals are oxidized in said alloy to form said composite.

3,785,811

ZINC-ALUMINUM ALLOY

Erich Pelzel, Otto-Lilienthal-Strasse 3,519, Stolberg, Germany

Filed July 7, 1970, Ser. No. 53,039

Claims priority, application Germany, July 9, 1969, P 19 34 788.7

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 A **4 Claims**

A zinc-aluminum alloy consisting of 18 to 24% by weight (preferably 21% by weight) aluminum, the balance zinc and 0.1 to 1.5% by weight nickel (preferably 0.3 to 1.0% by weight). The nickel component represents a further metal for which can be substituted, to an amount of about 50% by weight, titanium in an amount of 0.05 to 0.5% by weight of the alloy, copper up to 0.5% by weight of the alloy, iron in an amount of up to 0.75% by weight of the alloy, and silicon in an amount of up to 0.75% by weight of the alloy. The lead, cadmium and tin content should be no greater than 0.05% by weight of the alloy and the magnesium content is preferably less than 0.0005% by weight of the alloy.

3,785,812

METHOD OF EXPOSURE IN MULTI-COLOR ELECTROPHOTOGRAPHY

Seiji Matsumoto, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1970, Ser. No. 92,975

Claims priority, application Japan, Nov. 27, 1969, 44/95223

Int. Cl. G03g *13/04*

U.S. Cl. 96—1.2 **1 Claim**

An exposure method for use in multi-color electrophotography where (1) the degree of light diffusion is decreased when exposing with the blue component in a trichromatic separation, (2) the degree of light diffusion is increased when exposing with the other color components, and (3) a tungsten light source is used as the medium for projection.

3,785,813

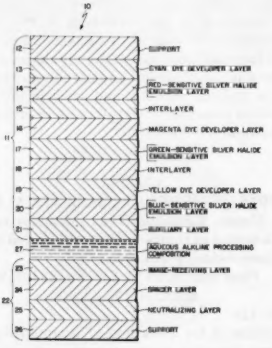
POLYCYCLIC HYDROPYRIMIDINE DEVELOPMENT RESTRAINERS

Donald O. Rickter, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,665

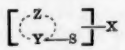
Int. Cl. G03d *7/00*

U.S. Cl. 96—3 **28 Claims**



A development restrainer is made available during dye diffusion transfer processing after a predetermined period by in-

corporating in the photographic film unit, an S-substituted, polycyclic pyrimidine compound of the formula



wherein Y is a hydropyrimidine group, X is hydrogen in its active or unblocked form or a group hydrolyzable by alkaline processing composition as a function of temperature to provide a controlled release of development restrainer during the development process and Z is a ring system attached to the hydropyrimidine group. Those compounds in which Z is an alicyclic group or a heterocyclic group are novel compositions of matter.

3,785,814

DIFFUSION TRANSFER COLOR PROCESSES AND PRODUCTS AND COMPOSITIONS USEFUL THEREIN

Edwin H. Land, Cambridge; Stanley M. Bloom, Waban, and Howard G. Rogers, Weston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1971, Ser. No. 211,718
Int. Cl. G03c *1/34, 5/54, 7/00*
U.S. Cl. 96—3 **48 Claims**

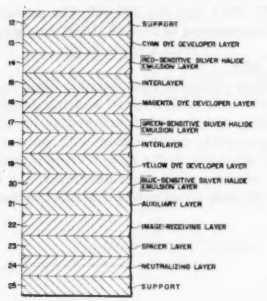
Dye developer diffusion transfer processes are disclosed utilizing 6-alkylamino purines, preferably in combination with a silver halide solvent. In particularly useful embodiments, processing is effected in the presence also of a uracil and bis-(β-aminoethyl)-sulfide.

3,785,815

SPACER OR TIMING LAYER IN COLOR DIFFUSION TRANSFER FILM

James A. Avtges, Belmont; Jerome L. Reid, Natick; Herbert N. Schlein, Beverly, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,779
Int. Cl. G03c *7/00, 5/54, 1/76, 1/48*
U.S. Cl. 96—3 **26 Claims**



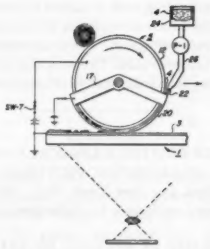
Novel photographic products for use in color diffusion transfer, particularly color diffusion transfer systems for forming color images viewable without separation as reflection prints, which products include a neutralizing layer for lowering the environmental pH after application of an aqueous alkaline processing fluid and a "timing" spacer layer so disposed with respect to the neutralizing layer that the processing fluid must first diffuse through the spacer layer before contacting the neutralizing layer, the spacer layer comprising, as a continuous phase, the coalesced essence of an aqueous film-forming synthetic polymer dispersion which is substantially impermeable to the processing fluid and a discontinuous phase comprising a material which is permeable to the processing fluid.

3,785,816

ELIMINATING CORONA ARCING IN PHOTOELECTROPHORETIC IMAGING

John M. La Cagnina, Rochester, N.Y., and Robert G. Davies, Clarksville, Va., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 821,202, May 2, 1969, Pat. No. 3,697,407.
This application Dec. 30, 1971, Ser. No. 214,496
Int. Cl. G03g *12/00, 15/00*
U.S. Cl. 96—1.3 **10 Claims**



Method and apparatus for eliminating corona arcing between electrodes in an electrophoretic imaging system by introducing a member at the entrance and exit of the nip between adjacent electrodes during the application of an electric field for imaging of an electrophoretic suspension between the electrodes.

3,785,817

TRANSFER OF PHOTOPOLYMER IMAGES BY IRRADIATION

August Dennis Kuchta, 20 Rolling Road, East Brunswick, N.J.

Filed Oct. 5, 1970, Ser. No. 78,180
Int. Cl. G03c *11/12*
U.S. Cl. 96—28 **7 Claims**

This invention relates to a process of imaging a surface by means of a transfer method utilizing an imaged photopolymerizable film element. The imaged element may be derived from a film element which comprises a photopolymerizable layer on a support and having a removable cover sheet laminated to the surface of said layer opposite from said support. Such elements comprise a dry photopolymerizable layer which is coated from a composition comprising a mixture of a particulate microcrystalline thickener having a particulate size no greater than .0001-inch, an ethylenically unsaturated monomer and an initiating system, and containing a sufficient amount of monomer to cause a thin film of substantially free monomer to form on the monomer-thickener layer upon drying. The layer will generally contain from 10–90 parts by weight of thickener per 100 parts by weight of monomer-thickener. The layer has optical density in the actinic region not more than 0.7 and a thickness of at least 0.00005-inch. The coplanar complementary polymerizable image remaining on the support, after imagewise exposure and removal of the cover sheet and exposed image, can be transferred to a receptor surface by laminating it to a receptor sheet and then exposing the layer to actinic radiation through the base or the receptor sheet of said element, if said sheet is transparent to the radiation.

3,785,818
METHOD OF MAKING LITHOGRAPHIC PRINTING PLATES

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 847,399, Aug. 4, 1969, Pat. No. 3,635,710. This application Oct. 13, 1971, Ser. No. 189,030

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **13 Claims**

A long lived gelatin lithographic printing plate is prepared by imagewise exposing an element bearing a silver halide emulsion layer having a stratum of hexacyanoferrate sol thereon to actinic radiation, developing in a conventional developer, and activating with a cupric ion solution to form a lithographic image which accepts ink in the exposed areas and water in the unexposed areas. Novel activating solutions for the silver halide are provided. The resulting printing plates are capable of yielding many thousands of impressions.

3,785,819
METHOD FOR PHOTOGRAPHICALLY PREPARING ANAMORPHIC PICTURES

Clarence A. Barnes, Jr., New York, N.Y., and Alan Fontaine, Westport, Conn., assignors to Reflectomorphics, Inc., New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,723

Int. Cl. G03c *11/00*

U.S. Cl. 96—46 **14 Claims**

A method for photographically preparing anamorphic pictures in which a true image of the picture to be prepared is projected through a dioptric lens system onto a curved reflected surface having an axis of curvature which is substantially perpendicular to the projected axial ray. An anamorphic reproduction of the image is reflected from the curved surface onto an opaque or translucent planer surface normal to the axis of curvature, and the planar surface is photographed from a direction parallel to the axis. In some embodiments the curved surface is cylindrical, while in other cases the surface is of conical configuration and the direction of the projected image is changed such that its axial ray is coaxial with the cone at the time the image reaches the surface.

3,785,820
PHOTORECORDING PROCESS AND PHOTORECORDING MEMBER

Eiichi Inoue; Isamu Shimizu; Ichiro Endo, and Hajime Kobayashi, all of Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 805,357, March 7, 1969, abandoned. This application Feb. 18, 1972, Ser. No. 227,636

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 R **7 Claims**

A photochromic compound, particularly, spiropyran compound, is used for producing images. The difference of properties such as polarity and solubility between the colored species and the colorless species is utilized to produce the images and the spiropyran compound is maintained in a dense state to obtain a stable colored state.

3,785,821
METHOD OF DEVELOPING VESICULAR PHOTOGRAPHIC MATERIALS

Norman T. Notley, P.O. Box 462, Pasadena, Calif.

Continuation-in-part of Ser. No. 866,770, Oct. 15, 1959, abandoned, which is a continuation of Ser. No. 569,015, Aug. 1, 1966, abandoned. This application June 18, 1971, Ser. No. 154,631

Int. Cl. G03c *5/18, 5/34*

U.S. Cl. 96—49 **6 Claims**

A process for producing a vesicular photographic image while minimizing shrinkage of the backing layer upon which the vesicular photographic material is coated. The coating contains, in addition to sensitizer, a dye or pigment which can produce heat on exposure to non-actinic light. The material is exposed, image wise, to actinic light and then exposed uniformly to non-actinic light which is absorbed by the dye or pigment to heat the material and produce an image. Since the dye or pigment is not in the backing, only the vesicular coating is heated. The non-actinic light is of sufficient intensity to develop an image in less than about 0.2 second.

3,785,822
PHOTOGRAPHIC EMULSIONS AND DEVELOPERS CONTAINING 2-MERCAPTO HETEROCYCLIC COMPOUNDS

Joseph DeWitt Overman, 1805 Breen Ln., Wilmington, Del.

Continuation-in-part of Ser. No. 91,220, Nov. 19, 1970, abandoned. This application June 30, 1971, Ser. No. 158,516

Int. Cl. G03c *5/30, 1/28, 1/06*

U.S. Cl. 96—66.3 **13 Claims**

This invention relates to photographic materials designed for processing in developing agents which have a long induction period and to which fog-reducing adjuvants have been added. The induction period can be considerably shortened and the restraining action of any antifoggant overcome by the addition of certain heterocyclic nitrogen compounds which contain a mercapto substituent adjacent to the nitrogen atom and which exhibit a pKa not less than 7.7.

3,785,823
POLYHEDRAL HALOBORANES AS DEVELOPER ADJUVANTS WITH A POLYETHYLENE OXIDE CONDENSATION PRODUCT

John H. Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1972, Ser. No. 238,480. The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.3 **21 Claims**

This invention relates to photographic films and developers and to improvement in film speed and top density which occurs by adding certain novel polyhedral haloborane compounds in synergistic combination with polyethylene oxide condenstaion products to the film-developer system. This invention also relates to improved developer tray life resulting from the use of these novel polyhedral haloboranes.

3,785,824
PHOTOGRAPHIC AQUEOUS DISPERSION CONCENTRATES

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 24, 1971, Ser. No. 183,703

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 R **11 Claims**

A synthetic, water-soluble polymer having a hydrocarbon backbone is employed as a dispersing agent in dispersions in water of a solvent for high-boiling, water-immiscible vehicles useful in the photographic solvent-dispersion technique for the formation of coupler-containing photographic silver halide elements.

3,785,825

LIGHT-SENSITIVE QUINONE DIAZIDE COMPOUNDS, COMPOSITIONS, AND PRESENSITIZED LITHOGRAPHIC PLATE

Albert S. Deutsch, Yonkers, and Joseph M. Poppo, New Rochelle, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed July 19, 1971, Ser. No. 164,131
Int. Cl. G03c *1/54*; G03f *7/08*; C07c *113/00*
U.S. Cl. 96—75 **14 Claims**

Light-sensitive compounds and compositions comprising alkyl ether esters of naphthoquinone diazides that resist hydrolysis during prolonged storage, and sensitized lithographic printing plates made therewith.

3,785,826

DIAZOTYPE MATERIALS FOR BLACKLINE IMAGES

Chester Slimowicz, and Walter J. Welch, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 56,186, July 10, 1970, abandoned, which is a continuation of Ser. No. 624,999, March 22, 1967. This application Apr. 26, 1972, Ser. No. 247,903
Int. Cl. G03c *1/54*, *1/58*
U.S. Cl. 96—75 **8 Claims**

Sensitizing agents for ammonia vapor developable blackline two-component diazotype sensitizing formulations comprising diamotized derivatives of 4-N-pyrrolidinyl-3-alkylparaphenylenediamine are employed with a mixture of coupling components which include an acetoacetamide, a naphthol, a diresorcyl compound alone or also with resorcinol.

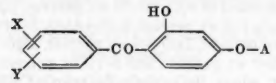
3,785,827

PHOTOGRAPHIC MATERIAL STABILISED AGAINST ULTRAVIOLET RADIATION

Bernhard Piller, Marly-le-Petit; Max Meier, Fribourg; Max Duennenberger, Frenkendorf; Hans Rudolf Biland, Gelterkinden, and Christian Luethi, Muenchenstein, all of Switzerland, assignors to Ciba-Geigy AG, Basil, Switzerland

Filed Mar. 10, 1971, Ser. No. 123,018
Claims priority, application Switzerland, Mar. 11, 1970, 3643/70
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **4 Claims**

This invention relates to colour photographic material. Said material is stabilized by means of a 2-hydroxybenzophenone which is free from sulphonic acid groups and which corresponds to the formula



wherein X represents a hydrogen or halogen atom, a possibly substituted alkyl, alkenyl or phenyl group, an alkylcarbonyl or alkylsulfonyl group or an A′-O group, Y represents a hydrogen or halogen atom, a possibly substituted alkyl group or an A″-O group, A, A′ and A″ each representing a hydrogen atom, a possibly substituted alkyl, alkenyl, cycloalkyl, aralkyl or phenyl group or a residue of the formula

$$-CO-(NH)_{n-1}-D$$

wherein D represents an alkyl, alkenyl or possibly substituted phenyl residue and *n* is one or two.

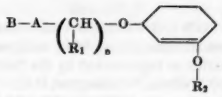
3,785,828

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masakuni Iwama; Toshihiko Yamamoto; Isaburo Inoue; Teruo Hanzawa, and Takaya Endo, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 66,140, Aug. 21, 1970, abandoned. This application Sept. 6, 1972, Ser. No. 286,718
Claims priority, application Japan, Aug. 28, 1969, 44-67622
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **2 Claims**

Light sensitive silver halide color photographic materials containing novel coupler having the general formula:



wherein B is a coupler residue; R_1 is hydrogen or a lower alkyl group; R_2 is an aliphatic hydrocarbon group having eight to 18 carbon atoms; *n* is an integer of one to four; and A is an -NHCO- or -CONH- group, provided that in case A is a -CONH- group, R_1 is hydrogen and *n* three or four.

3,785,829

NOVEL CYAN-DYE FORMING COUPLER

Jose M. Fernandez, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 2, 1972, Ser. No. 259,065
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **28 Claims**

A class of cyan-dye-forming α-naptholic couplers having an alkylthio, an alkysulfinyl, or an alkysulfonyl ballasting group attached onto the β-naptholic ring; elements and emulsions containing said couplers and a method for improving color photographic images by utilizing said couplers.

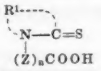
3,785,830

PHOTOTHERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Michael F. Sullivan; Roger M. Cole, and Wilbert J. Humphlett, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 14, 1972, Ser. No. 262,907
Int. Cl. G03c *1/02*, *1/72*
U.S. Cl. 96—114.1 **31 Claims**

A photothermographic element comprising a support having thereon (a) a reducing agent, (b) a silver salt of a thione compound, the thione compound being represented by the formula:



wherein *n* is 1 to 10, R^1 represents atoms completing a 5-member heterocyclic nucleus, Z is alkylene, such as alkylene containing 1 to 10 carbon atoms, and (c) a photosensitive component consisting essentially of photosensitive silver halide, in the absence of an image stabilizer or stabilizer precursor, can provide a developed and stabilized image upon imagewise exposure and then overall heating of the element. The photothermographic element can, but need not, contain a binder for the described components. Other addenda employed in photothermographic materials can be employed with the photothermographic element.

3,785,831

WHIPPABLE COMPOSITION

James Taylor Willock, Middle Barton, England, assignor to General Foods Limited, White Plains, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,637
Int. Cl. A23g 3/00
U.S. Cl. 99—139 4 Claims

A whippable topping composition having improved low temperature performance is prepared utilizing a mixture containing at least two emulsifiers, a primary and a secondary emulsifier. The primary emulsifier is a lactylated glycerol ester, and the secondary emulsifier is a partial or complete ester of a common food acid and a mono and/or diglyceride of a saturated or unsaturated fat forming $C_{12}-C_{22}$ fatty acid.

3,785,832

DENTAL PRIMER VARNISH

Rafael L. Bowen, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Filed Oct. 13, 1971, Ser. No. 189,034
Int. Cl. C09k 3/00
U.S. Cl. 106—35 6 Claims

A dental adhesive primer and varnish composition free of polymerizable monomers during storage and suitable specially for adhering dental direct filling resins and composite materials to human dentin and enamel consisting of the reaction product of N-phenyl glycine (NPG) type moiety and a glycidyl ether moiety containing at least one epoxy group such as p-chlorophenyl-2,3-epoxypropylether (CGE) or the reaction product of bisphenol A with epichlorohydrin (DGEBA) dissolved in the weight amount of about 5–15 percent in a suitable solvent, such as acetone, chloroform, and ether.

3,785,833

GLASSES OF THE Na_2O-K_2O-Nb_2O_5-SiO_2 SYSTEM AND GLASS CERAMICS MADE THEREFROM

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 5, 1971, Ser. No. 169,513
Int. Cl. C03c 3/22
U.S. Cl. 106—39.6 13 Claims

Thermally crystallizable glasses of the Na_2O-K_2O-Nb_2O_5-SiO_2 system and glass-ceramics made therefrom which are highly transparent, have a high refractive index, high dielectric constant and low loss tangents. The glasses consist essentially of 23–38 mole percent SiO_2, 23–47 mole percent Nb_2O_5, 13–30 mole percent Na_2O and 9–22 mole percent K_2O wherein the Na_2O-to-K_2O mole ratio is at least 0.7 and the ($Na_2O + K_2O$) to Nb_2O_5 mole ratio is from 0.8 to 1.8. By varying the heat treatment schedule for crystallization of the glass of the invention to a glass-ceramic, a specific high index of refraction and a specific dielectric constant within a prescribed range may be imparted to the finished transparent glass-ceramic. A glass-ceramic having two or more different indices of refraction and/or two or more dielectric constants may be produced.

3,785,834

GLASSES, GLASS-CERAMICS AND PROCESS FOR MAKING SAME

James Erich Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 9, 1972, Ser. No. 261,188
Int. Cl. C04b 3/22, 3/16, 3/12
U.S. Cl. 106—39.6 38 Claims

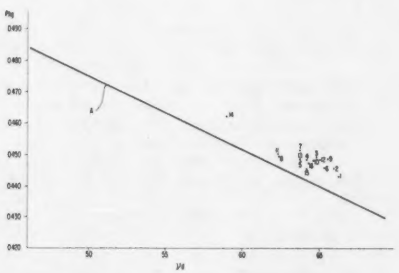
Thermally crystallizable glasses of the R_2O-RE_2O_3-Nb_2O_5-GF system wherein R is an alkali metal cation, RE is a rare earth metal cation, and GF is a glass former, namely, SiO_2, GeO_2 or P_2O_5, and transparent, translucent and opaque glass-ceramics made therefrom which have excellent dielectric properties, have high indices of refraction when the glass-ceramic is transparent and are suitable for use as capacitors and dielectrics, and for use in acoustooptical and electrooptical devices and the like. Also thermally crystallizable glasses of the R^1O-RE_2O_3-Nb_2O_5-GeO_2 system wherein R^1 is a divalent metal cation and RE is a rare earth metal cation and such glasses have high indices of refraction usually above 2.00, and very low acoustic attenuation. These properties make the glasses and also the transparent glass-ceramics made therefrom ideally suited for use in acoustooptical and electrooptical devices wherein such properties are important to the efficient operation of such devices. Transparent and opaque glass-ceramics made from such glasses also have good dielectric properties including high dielectric constants and low dissipation factors. Glass-ceramics of the invention preferably have crystalline phases exhibiting the cubic perovskite structure or the tetragonal tungsten-bronze structure.

3,785,835

ANOMALOUS DISPERSION GLASS

Tetsuro Izumitani, and Isao Masuda, both of Tokyo, Japan, assignors to Hoya Glass Works, Ltd., Shinjuku-ku, Tokyo, Japan

Filed May 19, 1972, Ser. No. 254,965
Claims priority, application Japan, May 21, 1971, 46-34546
Int. Cl. C03c 3/16
U.S. Cl. 106—47 Q 2 Claims



An anomalous dispersion glass having an Abbe's number (*νd*) of 58–68 and a partial dispersion ratio (Phg) of 0.4425–0.4650, produced by adding 0.3–7.0 wt. parts of CeO_2 and 0–2 wt. parts of Sb_2O_3 to 100 wt. parts of phosphate glass which is composed of P_2O_5 40–70 wt. percent, B_2O_3 1–21 wt. percent, Al_2O_3 1–8 wt. percent, B_2O_3+Al_2O_3 2–24 wt. percent, BaO 8–42 wt. percent, ZnO 0–9 wt. percent, MgO 0–7 wt. percent, CaO 0–7 wt. percent, SrO 0–11 wt. percent, La_2O_3 0–7 wt. percent, where BaO+MgO+ZnO+SrO+CaO+La_2O_3 are 15–52 wt. percent.

3,785,836

HIGH MODULUS INVERT ANALOG GLASS COMPOSITIONS CONTAINING BERYLLIA

James F. Bacon, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 874,674, Nov. 6, 1969, abandoned. This application Apr. 21, 1972, Ser. No. 246,295
Int. Cl. C03c 3/04
U.S. Cl. 106—50 3 Claims

Glass compositions having a Young's modulus of at least 15 million psi and a specific modulus of at least 110 million inches consisting essentially of, in mols, 10–45% SiO_2, 2–15% Li_2O, 3–34% BeO, 12–36% of at least one bivalent oxide

selected from the group consisting of CaO, ZnO, MgO and CuO, 10–39% of at least one trivalent oxide selected from the group consisting of Al_2O_3, B_2O_3, La_2O_3, Y_2O_3, Fe_2O_3 and the mixed rare earth oxides, the total number of said bivalent and trivalent oxides being at least three, and up to 10% of a tetravalent oxide selected from the group consisting of ZrO_2, TiO_2 and CeO_2.

3,785,837

PARTIALLY CRYSTALLIZABLE GLASSES FOR PRODUCING LOW-K CROSSOVER DIELECTRICS

Rajnikant Babubhai Amin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,491

Int. Cl. C03c *3/22, 3/30*

U.S. Cl. 106—52 **6 Claims**

Partially crystallizable glasses of BaO—ZnO—CaO—TiO_2—Al_2O_3—SiO_2 which upon firing form crossover dielectrics for use in printed circuits. The glasses are in finely divided form and are optionally dispersed in an inert liquid vehicle. The resultant partially crystallized crossover dielectrics consist essentially of 20–48 percent by weight crystals (celsian, sphene and zinc orthosilicate) dispersed in a glassy matrix and exhibit reduced dielectric constant (K).

3,785,838

INORGANIC REFRACTORY FIBROUS COMPOSITIONS

V. Wesley Weidman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 4, 1971, Ser. No. 195,864

Int. Cl. C04b *43/02*

U.S. Cl. 106—55 **12 Claims**

Inorganic fibers such as mineral wool are bonded in a coherent mass with a binder such as colloidal positively charged particles having a silica core and a coating of a polyvalent metal-oxygen compound. The binder is flocculated from solution onto the fibers by agents such as attapulgite or hectorite. These inorganic structures retain their strength at temperatures as high as 2300°F.

3,785,839

PORTLAND CEMENT AND ADDITIVES THEREFOR

Richard B. Peppler, and Philip A. Rosskopf, both of South Euclid, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 179,239

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **36 Claims**

The rate of hardening of a portland cement mix is accelerated by the addition of a monomeric, water-soluble hydroxylated adduct formed by reacting a urea and an aldehyde, said adduct being employed in an amount within the range of from about 0.01 percent to about 1.00 percent, advantageously about 0.2 percent to about 0.8 percent, by weight of cement. The water content of the cement mix for a given consistency tends to be lowered by the incorporation of the adduct, conveniently monomethylolurea and dimethylolurea, while avoiding toxic and corrosive effects normally associated with aldehyde-type set accelerators. The adducts may be employed in concentrated amounts in water and may be used in combination with known set accelerating agents. The adducts may also be employed in combination with set retarders where reduction in water content is desired without appreciable change in the rate of set of the cement mix.

3,785,840

LIME-FLY ASH-SULFITE MIXTURES

Leonard John Minnick, Cheltenham; William C. Webster, Norristown, and Charles L. Smith, Conshohocken, all of Pa., assignors to G & W. H. Corson, Inc., Plymouth Meeting, Pa.

Filed June 5, 1972, Ser. No. 259,461

Int. Cl. C04b *7/34*

U.S. Cl. 106—118 **6 Claims**

A hardenable cementitious mixture comprised of lime, fly ash, and sulfite salts in predetermined portions may be produced from a combination of the fly ash product from combustion equipment and the slurry produced in scrubbing stack gases from such equipment to remove sulfur oxides therefrom. Generally, the cementitious mixture comprises a water solids mixture with about 30 – 90 weight percent solids. Further, the solids comprise 0.25 – 70 percent by weight alkaline earth metal hydroxide, 10 – 99.5 weight percent fly ash, and 0.25 – 70 percent by weight of alkaline earth metal sulfite of which some portion thereof may be replaced by alkaline earth metal sulfates.

This cementitious mixture may be used either by itself or with a filler or aggregate material.

3,785,841

WAX COMPOSITION

William A. Beard, 2301 Dodge Ave., Fort Wayne, Ind.

Filed Feb. 10, 1969, Ser. No. 798,126

Int. Cl. C08h *17/44;* **C08b** *27/52*

U.S. Cl. 106—186 **18 Claims**

A wax composition which can be used as a protective coating, a release agent, or the like, and applied to articles by spraying or brushing the composition onto the article or by dipping the article in the composition or the like. The wax composition comprises a homogeneous combination of a wax and a thermoplastic resin and/or a fatty amide in solution. The solution in a specific embodiment contains a wax, a thermoplastic resin, a fatty amide, an aromatic solvent, an aliphatic petroleum solvent, and a chlorinated solvent.

3,785,842

SYNTHETIC AGGREGATES

Ransome James Murray, Gravesend, England, assignor to The Associated Portland Cement Manufacturers Limited, London, England

Filed Jan. 6, 1971, Ser. No. 104,757

Claims priority, application Great Britain, Jan. 16, 1970, 2303/70

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B **7 Claims**

A method of producing a synthetic aggregate, comprising preparing a finely divided raw material having an oxide analysis SiO_2 5–35 percent, Al_2O_3 15–70 percent, FeO 0–65 percent. MgO 0–50 percent, alkalis <5 percent. and CaO<5 percent, the combined content of FeO and MgO being sufficient to provide at least 15 percent of spinels in the finished aggregate, agglomerating the raw material, and firing the agglomerated material at a temperature causing recrystallization of the raw materials until substantial elimination of any uncombined magnesium oxide is achieved and a material is produced comprising spinel crystals imbedded in a matrix of alumino-silicates, silicates, or a mixture thereof, and having a porosity low enough to provide an aggregate abrasion value less than 20 percent.

3,785,843

PROCESS FOR IMPROVING A DISAZO PIGMENT

Joachim Ribka, Offenbach am Main, and Siegfried Schwerin, Hofheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 2, 1971, Ser. No. 204,371

Claims priority, application Germany, Dec. 4, 1970, P 20 59 675.2

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **3 Claims**

A process for improving the properties of Pigment Yellow 17 (Colour Index 21 105) wherein an aqueous suspension of the crude dyestuff prepared in the usual manner by coupling tetrazotized 4,4'-diamino-3,3'-dichloro-diphenyl with 1-acetoacetylamino-2-methoxy-benzene is heated for several hours to temperatures between 100° and 200°, preferably 100°C to 150°C, at a pH-value higher than 8, preferably at about 11. Pigment Yellow 17 after-treated in this way has an essentially better fastness to light than the untreated pigment. Furthermore, the graphic prints produced with it have a higher lustre.

3,785,844

EXPANSIVE CEMENT ADDITIVES AND PROCESS FOR PRODUCING THE SAME

Toshio Kawano, Kawasaki, Japan, assignor to Onoda Cement Co., Ltd., Yamaguchi-ken, Japan

Filed Nov. 8, 1972, Ser. No. 304,817

Claims priority, application Japan, Nov. 13, 1971, 46-90749; Mar. 17, 1972, 47-27304

Int. Cl. C04b *13/22*

U.S. Cl. 106—314 **12 Claims**

A finely pulverized expansive cement additive having an excellent chemical prestressing property, a clinker of which consists of alite crystals and calcium oxide crystals dispersed in a vitreous interstitial substance, wherein said alite and calcium oxide crystals have a size ranging from 50 to 100 microns and from 15 to 60 microns respectively, and the content of said calcium crystals and said interstitial substance are from 30 to 80 percent and from 2 to 27 percent by weight based on the clinker respectively.

3,785,845

PRINTING PROCESS

James Derek Birchall, Norley; John Edward Cassidy, Hartford; John Stafford, and Anthony Graham Marshall Last, both of Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 10, 1971, Ser. No. 206,909

Claims priority, application Great Britain, Dec. 11, 1970, 59010/70

Int. Cl. B41m *1/24;* **B44d** *1/32*

U.S. Cl. 117—15 **10 Claims**

A process is provided for applying printed matter to plastic substrates by coating the substrate with a composition capable of generating aluminum phosphate. A complex aluminum phosphate having at least 1 chemically-bound molecule of an hydroxy compound ROH where R is hydrogen or an organic group is preferred. The coating is heated to provide at least a partially cured layer of aluminum phosphate and the inked pattern is applied thereto.

3,785,846

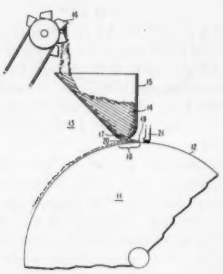
METHODS FOR DEVELOPING ELECTROSTATIC IMAGES

Theodore M. Hider; Frank A. Hawn, and George E. Makie, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1971, Ser. No. 158,811

Int. Cl. G03g *13/08*

U.S. Cl. 117—17.5 **6 Claims**



Development means and method for developing electrostatic images in a moving insulating surface with developer material in which the flow of the developer material onto the insulating surface is such that a dynamic developer crown is created of such a size to substantially develop the electrostatic image. Preferably the means for creating the developer crown is a developer receptacle positioned in near contact with the moving insulating surface.

3,785,847

PROCESS FOR ANTI-CORROSIVE PROTECTION BY REDUCTION OF IONISED METALS ON METAL SUBSTRATE

Leonard Wisniewski, 302 Henley Manor, Beach Road, Moville Point, Cape Town, South Africa

Filed June 14, 1971, Ser. No. 152,999

Claims priority, application Brazil, June 17, 1970, 219822

Int. Cl. B44d *1/44*

U.S. Cl. 117—62 **8 Claims**

Protecting iron and steel against corrosion by deposition of a metallic deposit from ionic compounds on the metal to be protected. The method comprises applying to the metal to be protected a paint consisting of at least one elemental metal of higher electrode potential than the metal to be protected, and at least one metal compound which yield metal ions of lower electrode potential than the metal to be protected or the elemental metal in organic binder, then treating the dry paint with acidic aqueous electrolyte containing at least one of said metal ions.

3,785,848

POLYURETHANE PLASTICIZED TOPCOAT FOR LEATHER AND METHOD

Victor Mattei, Cinnaminson, N.J., and Constance A. Lane, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 4, 1969, Ser. No. 855,363

Int. Cl. B44d *1/32;* **C08b** *21/08*

U.S. Cl. 117—73 **6 Claims**

The present invention is concerned with improved coating compositions based on hard polymers, specifically, cellulose acetate butyrate plasticized with diisocyanate-extended polyesters. The diisocyanate-extended polyesters are formed

in situ in the coating of the invention, which is a final top coating for the products of the invention. The invention also includes flexible products, such as full grain leather and substitute leather having topcoatings thereon of outstanding flexibility made from these compositions, and methods for their preparation.

3,785,849

DIACRYLOXY ESTERS OF ANHYDRIDES AND COATING COMPOSITIONS DERIVED THEREFROM

Gordon M. Parker, Harwick; Marco Wismer, Gibsonia, and Ernest A. Hahn, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 8, 1969, Ser. No. 814,436
Int. Cl. B44d *1/50;* **C09d** *3/80*
U.S. Cl. 117—93.31 **30 Claims**

This invention relates to acryloxy (or methacryloxy)-alkyl (or alkyloxyalkyl) acryloxy (or methacryloxy) hydroxyalkyl organic dicarboxylic esters prepared by reacting an organic acid anhydride with a hydroxyalkyl acrylate or methacrylate and then reacting this half-ester with a glycidyl acrylate or methacrylate. These compounds are useful in coating compositions and particularly coating compositions curable by radiation.

3,785,850

METHOD OF APPLYING ACRYLIC FUNCTIONAL CARBONATE ESTER COATING TO PLASTIC SUBSTRATES USING HIGH ENERGY IONISING RADIATION

Gordon M. Parker, Apollo, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 829,754, June 2, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,327
Int. Cl. B44d *1/50;* **C08f** *11/00*
U.S. Cl. 117—93.31 **8 Claims**

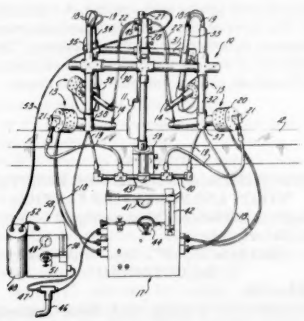
Phosgene is reacted with a polyhydroxy containing compound to form a polychloroformate. The polychloroformate is then reacted with an acrylate containing one hydroxyl group in the presence of an acid acceptor to form the novel complex acrylate esters of this invention. The product is highly radiation-sensitive so that it may be polymerized by ionizing irradiation and forms a coating on plastic substrates which is hard, stain-resistant and abrasion-resistant.

3,785,851

HOT END COATING DEVICE

Michael A. Novice, Elmira, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed July 1, 1971, Ser. No. 158,751
Int. Cl. C03c *17/06;* **C23c** *11/02*
U.S. Cl. 117—54 **5 Claims**



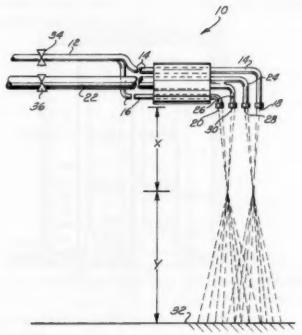
The coating method comprises introducing a coating material into an air stream above the pyrolysis temperature of the coating material and directing the air stream at the vitreous surface. The vitreous surface is at a temperature above the pyrolysis temperature of the selected coating material. The apparatus includes an electrical filament heated to a temperature from about 500°F to about 2,000°F. A source of air is blown over the electrical filament and heated to a temperature of from about 400°F to about 1,800°F. The coating material is introduced into the air stream which is then directed at the vitreous surface.

3,785,852

BITUMINOUS EMULSION-RUBBER LATEX COMPOSITIONS AND METHOD OF DEPOSITING COAGULA THEREFROM

George Wilhelm Schleidt, Shaker Heights, Ohio, assignor to The Tremco Manufacturing Company, Cleveland, Ohio

Filed May 10, 1972, Ser. No. 252,055
Int. Cl. B05b *7/08;* **B44d** *1/08*
U.S. Cl. 117—105.5 **8 Claims**



Method of depositing a coagulum from a bituminous emulsion-rubber latex composition by simultaneously spraying the composition and a coagulant under liquid pressure, along spray paths which converge so that the composition and coagulant mix thoroughly before contacting the surface being treated.

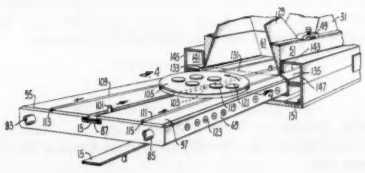
The use of polyvinyl alcohol as a stabilizer for the bituminous emulsion is also disclosed.

3,785,853

CONTINUOUS DEPOSITION REACTOR

Earl L. Kirkman, Felton, and Gerald M. Bowers, Saratoga, both of Calif., assignors to Unicorp Incorporated, Sunnyvale, Calif.

Filed May 24, 1972, Ser. No. 256,478
Int. Cl. C23c *11/06*
U.S. Cl. 117—106 **22 Claims**



A plurality of gas deposition chambers are arranged in a row and positioned over a heating slab. A work-piece carrying pallet is advanced through the row of deposition chambers by a

moving ribbon and two cables which also provide rotary motion to the pallet as it is being advanced. Preheat and cooling stations are provided at opposite ends of the row of deposition chambers and are each provided with a collimated gas flow "curtain" by the use of honeycomb material positioned in the path of a gas stream.

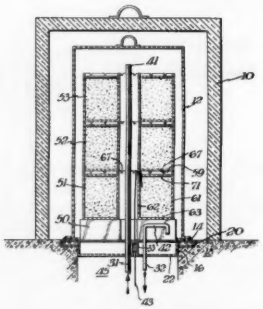
3,785,854
DIFFUSION COATING

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Co., Inc., Wilmington, Del.

Continuation-in-part of Ser. Nos. 219,514, Jan. 20, 1972, and Ser. No. 90,682, Nov. 18, 1970, each is a continuation-in-part of Ser. No. 837,811, June 30, 1969, abandoned. This application May 18, 1972, Ser. No. 254,403. The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl. C23c *9/02*

U.S. Cl. 117—107.2 P **13 Claims**



Rich chromium diffusion coating on dispersion-strengthened nickel or nichrome is obtained in one step by embedding work in chromium diffusion coating pack containing nickel with or without some cobalt, and held in unsealed retort cup at least 15 inches high. Pack can also contain metallic iron to reduce coating temperature. Masking is arranged by covering the sites to be masked with a layer of a mixture of nickel powder and inert filler. For better high temperature oxidation resistance the chromium-rich coating is covered by an aluminum diffusion coating from a simple aluminum diffusion pack or one that has the aluminum mixed with chromium. Low temperature aluminum diffusion is more uniform when pack energizer is aluminum chloride or other material that does not generate nitrogen, and gives good protection against marine corrosion of steels, and particularly when there is a chromate-type coating applied over the aluminizing. Highly effective chromate-type coating mixture consists essentially of aqueous solution of chromic and phosphoric acid also containing magnesium salts of said acids and dispersed polytetrafluoroethylene particles. Aluminized superalloy can be heated in air to whiten it, then cleaned to give product having more ductile case. Such coated superalloy can also be stripped of coating by aqueous HNO_3-HF-CrO_3 bath.

3,785,855
METHOD FOR COATING STEEL

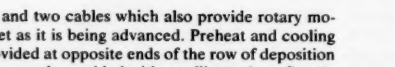
David K. Sausaman, 7098 Williamsburg Ln., Terre Haute, Ind., and Robert F. Purcell, 1501 Paul Dresser Dr., Terre Haute, Ind.

Filed Jan. 14, 1972, Ser. No. 218,013

Int. Cl. B32b *15/08;* **B44d** *1/36*

U.S. Cl. 117—75 **9 Claims**

A process for coating steel by applying thereto a monomer or partial polymer of an amide, represented by the formula



where R′ is hydrogen, methyl or ethyl and R is methyl, ethyl, or hydroxymethyl, heating to effect further polymerization, applying thereto a soiution or a dispersion of a vinyl halide polymer, copolymer, or terpolymer and heating to effect evaporation of the solvent or coalescence of the dispersion.

3,785,856
OIL SEAL OR SLEEVE HAVING PRESS-FITTED PORTIONS COATED WITH SYNTHETIC RUBBER LATEX

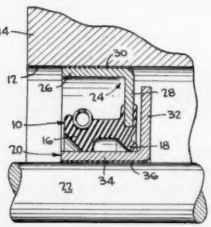
Syuichi Gotoh, Fujisawa, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 880,988, Nov. 28, 1969, abandoned. This application Apr. 3, 1972, Ser. No. 240,751

Claims priority, application Japan, Dec. 17, 1968, 43-92476

Int. Cl. F16j *15/16*

U.S. Cl. 117—75 **4 Claims**



Machine elements, such as oil seals, wherein metallic press-fitted portions thereof are coated with grain-free vulcanized synthetic rubber latices to improve the sealing efficiency.

3,785,857
SURFACE FINISHING

Charles D. Boyer, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Mar. 23, 1972, Ser. No. 237,492. The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl. B32b *17/06;* **C09d** *1/00*

U.S. Cl. 117—124 B **11 Claims**

A method of providing a glass surface with a protective coating, which comprises the steps of coating the surface with a solution containing magnesium, ammonium, chromate and phosphate ions, and curing said coating. A composite article comprised of a layer of glass and a substantially water insoluble, transparent, cured coating adhered thereto. The coating being comprised of magnesium cations and anionic polymeric chains of chromium, oxygen and phosphorus atoms.

3,785,858
METHOD FOR IMPROVING THE FIRE RESISTANCE OF NYLON AND POLYESTER FABRICS

Jay C. Chapin, Marblehead, Mass., assignor to Ventron Corporation, Beverly, Mass.

Filed June 19, 1972, Ser. No. 264,342

Int. Cl. C09d *5/18*

U.S. Cl. 117—136 **2 Claims**

The resistance to burning and flame proprogation of synthetic textile fabrics, such as nylon and polyester is improved by treatment with an aqueous solution of formaldehyde and ammonium thiocyanate and drying.

3,785,859
METHOD FOR FLAMEPROOFING FIBERS

Hajime Fujii, and Tatsuo Hattori, both of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Dec. 29, 1971, Ser. No. 213,537

Claims priority, application Japan, Dec. 29, 1970, 45-121416; Dec. 30, 1970, 45-122090

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **12 Claims**

Natural or synthetic fibers are flame-proofed by treatment with an aziridinyl phosphine oxide compound containing an halogen and an acid curing catalyst which is cured to fix the aziridinyl phosphine oxide compound to the fiber.

3,785,860
FLOOR POLISHING METHOD AND ARTICLE

Richard E. Zdanowski, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 640,851, May 24, 1967, Pat. No. 3,573,239, which is a continuation-in-part of Ser. No. 455,609, May 13, 1965, abandoned, which is a continuation-in-part of Ser. No. 98,744, March 28, 1961, abandoned. This application Mar. 8, 1971, Ser. No. 122,245. The portion of the term of this patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. B32b *37/08*; **B44d** *5/00*

U.S. Cl. 117—138.8 UN **3 Claims**

This invention relates to methods of using coating compositions, and especially to floor polishing compositions, which are particularly suitable for applying glossy finishes on wood, rubber, glass, tile and linoleum surfaces, either with or without paint or varnish finishes, and to the resulting article. These compositions adapted to be used for polishing floors, furniture, and the like, are formed of an aqueous dispersion having a pH of at least 7.0 and containing, as essential components, water, a wax, a water-insoluble linear polymer of monoethylenically unsaturated molecules, and a dispersing agent in a proportion from 0.1 to 20 percent by weight, based on the total weight of polymer and wax, any content of alkali-soluble resin being not over 50 percent by weight, based on the weight of the polymer, any alkali-soluble resin, if present, preferably being selected from the group consisting of shellac, Manila gum, Loba gum and alkali-soluble alkyds or polyesters, the improvement consisting in using for essentially the entire weight of the polymer,

A. a water-insoluble linear copolymer of

I. 10 to 55 percent by weight of at least one nitrile of acrylic or methacrylic acid, and

II. 45 to 90 percent by weight of at least one ester of (a) acrylic acid with a saturated aliphatic alcohol having one to 18 carbon atoms or (b) methacrylic acid with n-butanol or a saturated aliphatic alcohol having five to 18 carbon atoms,

the sum of the proportions of (I) and (II) totaling 100 percent,

or

B. a water-insoluble linear copolymer of

1. 10 to 55 percent by weight of at least one nitrile of acrylic or methacrylic acid,

2. 20 to 60 percent by weight of at least one ester of acrylic or methacrylic acid with a saturated aliphatic alcohol having one to 18 carbon atoms,

3. 0 to about 60 percent by weight of at least one other water-insoluble monomer selected from the group consisting of vinyl acetate, styrene, vinyltoluene, vinyl chloride, and vinylidene chloride, and

4. a. ½ to 15 percent by weight of acrylic acid, methyacrylic acid or itaconic acid in the form of amine, ammonium or alkali-metal salt, or

b. 4 to 15 percent by weight of at least one monomer containing an amine group,

the sum of the proportions of (1), (2), (3) and (4) totaling 100 percent,

the components of the copolymer being such that a film formed thereof has a KHN of about 2 to 20, and providing in the composition a weight ratio of copolymer to wax between 95:5 to 10:90.

3,785,861
MELAMINE RESINS FOR IMPROVING SURFACE PROPERTIES OF SHAPED ARTICLES OF SYNTHETIC RESINS

Noboru Tanimura, Niza; Kenji Mori, Tokyo, and Hirosi Tanaka, Niza, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

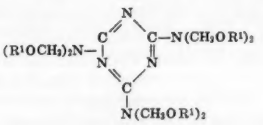
Filed Mar. 3, 1972, Ser. No. 231,735

Claims priority, application Japan, Mar. 12, 1971, 46-13078; June 1, 1971, 46/37480; June 16, 1971, 46/42493; July 23, 1971, 46/54650

Int. Cl. B44d *1/22*; **C08b** *21/08*; **C08a** *37/32*

U.S. Cl. 117—138.8 B **20 Claims**

A composition comprising (A) 100 parts by weight of an etherified methylolmelamine of the formula



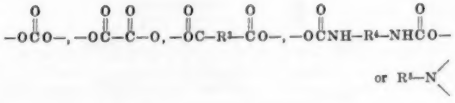
wherein R^1 represents an alkyl group having 1 to 4 carbon atoms, (B) about 0.01 to 5 parts by weight of nitrocellulose, (C) about 1 to 50 parts by weight of at least one alkyleneglycol selected from the group consisting of:

$H—OR^2OR^2OH$

and

$H—(OR^2)—X—(R^2O)—H$

wherein R^2 represents $—CH_2CH_2—$, $—CH_2CH(CH_3)—$ or $—(CH_2)_4—$ group; p is 0 or a positive integer; X represents



group wherein R^3 represents an alkylene group having 1 to 14 carbon atoms, phenylene or cyclohexylene group; R^4 represents an alkylene group having 2 to 17 carbon atoms, phenylene or cyclohexylene group; R^5 represents an alkyl group having 1 to 8 carbon atoms and when X represents

group R^2 is $—CH_2CH_2—$ group; m represents an positive integer; and n is an integer of 1 to 10, and (D) about 0.01 to 12 moles, based on one mole of said etherified methylolmelamine, of an acid catalyst.

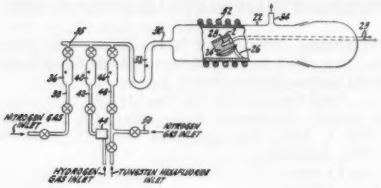
The compositions are heat-cured on the surfaces of shaped articles of synthetic resins. The heat-cured coatings are characterized by good hardness, mar resistance, abrasion resistance, antistat as well as good surface glass without losing the transparency of synthetic resins.

3,785,862

METHOD FOR DEPOSITING REFRACTORY METALS

William Augustus Grill, Parsippany, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,796
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 3 Claims



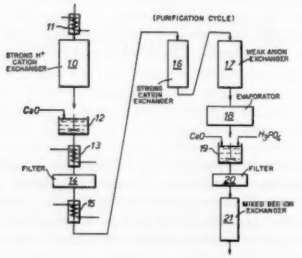
A method for depositing a refractory metal on a semiconductor oxide coating, comprising simultaneously etching the oxide coating with the metallic hexafluoride and depositing a relatively thin layer of the refractory metal by reduction of the hexafluoride, and thereafter depositing a relatively thick layer of the refractory metal by reduction of the hexafluoride alone.

3,785,863

PROCESS AND PLANT FOR THE PURIFICATION OF RAW SUGAR JUICE

Pierre Louis Henri Devillers, La Celle Saint Cloud, and Michel Loilier, La Garenne Colombes, both of France, assignors to Syndicat National des Fabricants de Sucre de France, Paris, France

Filed Aug. 23, 1971, Ser. No. 173,999
Claims priority, application France, Aug. 25, 1970, 70.31004
Int. Cl. C13d *3/14*
U.S. Cl. 127—9 11 Claims



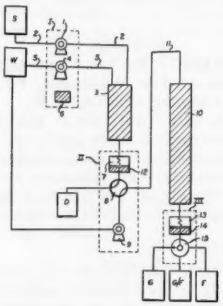
A process and plant for purifying raw sugar juice such as diffusion or expressed juice comprising passing the juice through a first strong H+ cation exchanger; neutralizing the resultant liquid with lime and filtering the neutralized liquid, passing it successively through a second strong cation exchanger and a weak anion exchanger, purifying the liquid coming from the weak anion exchanger with phosphoric acid after a second filtration, passing the filtrate from the second filtration through a weak cation exchanger and a strong cation exchanger. The neutralized liquid is preferably cooled before going into said first and second cation exchangers at a temperature such that the sugar contained therein is not practically subject to inversion.

3,785,864

PROCESS FOR THE CHROMATOGRAPHIC SEPARATION OF MULTI-COMPONENT MIXTURES CONTAINING GLUCOSE

Karl Lauer, Strahlenburg; Heinz-Gunter Budka, and Georg Stoeck, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation-in-part of Ser. No. 75,465, Sept. 25, 1970, Pat. No. 3,686,117. This application June 14, 1971, Ser. No. 152,980
Claims priority, application Germany, July 23, 1970, 2936525; Mar. 13, 1971, 2112176. The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.
Int. Cl. C13k *1/00*
U.S. Cl. 127—46 A 15 Claims



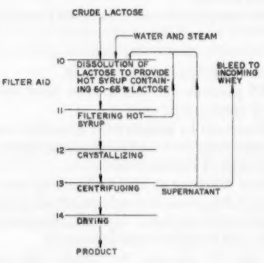
Multi-component mixtures are chromatographically separated into their components on a large scale by using a separation column divided into two sections, passing the feed stream into the first section, removing the fractions containing impurities from the end of the first section, simultaneously passing an equivalent amount of elution agent into the second section, thereupon connecting the two column sections with each other until there appears at the end of the first section the fraction containing impurities from the next cycle of feed passed into the first section, and recovering the separated main components at the end of the second section.

3,785,865

LACTOSE REFINING PROCESS

Henry L. Pollard, Millbrae, Calif., assignor to Foremost-McKesson, Inc., San Francisco, Calif.

Filed Aug. 3, 1972, Ser. No. 277,599
Int. Cl. C13k *5/00*
U.S. Cl. 127—55 4 Claims



A process for refining crude lactose in which the lactose is dissolved in water in an amount sufficient to provide concen-

tration of the order of 60 – 70% solids and at a temperature (e.g. 218°F.) near the boiling point (e.g. 220°F.) of the concentrated solution. The hot syrup is then filtered to remove solid impurities and the refined lactose removed by crystallization.

3,785,866

METHOD FOR AVOIDING PITTING IN PLATING OXIDE-FILM-DEVELOPING METALS

Samuel S. Frey, Elizabeth, N.J., assignor to Oakite Products Inc., Berkeley Heights, N.J.

Division of Ser. No. 787,589, Dec. 27, 1969, Pat. No. 3,684,719, which is a continuation-in-part of Ser. No. 447,089, April 9, 1965, Pat. No. 3,446,715. This application Aug. 14, 1972, Ser. No. 280,575

Int. Cl. C23g *1/10*

U.S. Cl. 134—3 **5 Claims**

The tendency to blistering and related adverse effects on adhesion of protective coatings to be applied over the surface of a metal oxidizable by anodization and capable of taking an electrodeposit, is reduced by forming an anodic film on the metal surface, and then removing that film with any natural oxide film on which it may have been formed, by immersing the oxidized surface in an aqueous pickling bath containing dissolved inorganic ferric salt, sulfuric acid or a bisulfate, and an inorganic fluoride.

3,785,867

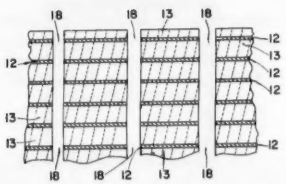
BATTERY PLATES COMPRISING A MULTIPLICITY OF PERFORATED METALLIC FOIL ELEMENTS AND A BATTERY UTILIZING SAME

Joseph Edwards, Bishopston, Wales, and John Edward Whittle, Sutton Coldfield, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 28,929, April 15, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,019

Int. Cl. H01m *43/04*

U.S. Cl. 136—6 R **7 Claims**



Battery plates for acid or alkaline batteries are made up of a multiplicity of perforated metallic foil elements stacked in face-to-face contact. The foil elements carry a surface deposit of battery active mass and the numerous perforations through the foil surfaces are generally uniformly distributed over the surface area. The holes in each foil element are substantially in register with the holes in the next adjacent foil element. In the stack, the foils are separated from one another by layers of battery active mass of at least twice the thickness of the foils. Electrical contact, in parallel among the foils, is attained by welding (or by other means of attaining a metallic conductive path) only at the periphery of the stack.

3,785,868

ZINC ELECTRODE

John L. Devitt, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Nov. 20, 1970, Ser. No. 91,545

Int. Cl. H01m *43/02*

U.S. Cl. 136—30 **8 Claims**

A pasted zinc electrode for use in an alkaline battery cell is described in which a plating additive is incorporated into the electrode either as a coating on a suitable electrically conductive substrate, or as a portion of the zinc paste formulation. The paste mixture contains a major portion of an active zinc material, and a source of mercury for gassing and corrosion inhibition. Enough vehicle is employed in the paste so that when dried the electrode active material is porous. The combination of the porous zinc active material, use of the plating additive, and the use of excess zinc in the paste material provides an active substrate surface in which zinc dendritic growth is minimized and localized preferentially within the interior body of the negative electrode. The negative plate is useful in alkaline electrolyte-containing secondary cells.

3,785,869

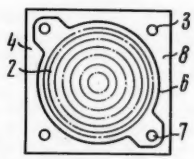
METHOD OF MANUFACTURING ELECTRODE GROUPS OF ALKALINE ACCUMULATORS

Leonid Sergeevich Zdarov, prospekt Kirova, 15, kv. 2; Nikolai Sergeevich Chernoglaskin, ulitsa 20 LET VLKSM, 100, kv. 6; Nikolai Ivanovich Igonin, ulitsa Dzerzhinskogo, 2, kv. 2; Vladimir Yakovlevich Zizo, prospekt Entuziastov, 12, kv. 13; Viktor Dmitrievich Karev, poselok Komsomolsky, 1-y Amursky proezd, 5, kv. 4; Stanislav Nikandrovich Karmanovsky, poselok Vyshny Volochek, ulitsa Karla Marxa, III; Nikolai Vasilievich Timofeev, ulitsa 7-ya Nagornaya, 8, kv. 2, and Vladimir Dmitrievich Petrov, 1-y Vesenny proezd, 3, kv. 12, all of Saratov, U.S.S.R.

Filed Dec. 29, 1970, Ser. No. 102,323

Int. Cl. H01m *35/18*

U.S. Cl. 136—75 **2 Claims**



A method of manufacturing disc-mounted electrode groups of alkaline accumulators comprising the steps of stamping the perforated bottom of the disc and, simultaneously forming, locating holes spaced outwardly of the perforated part from a steel band, fixing the band on locating holes and cutting it into separate plates each having the perforated bottom of the disc and with locating holes drawing from the profile of the future disc, punching the disc with the contact holes, and assembling the electrodes into groups.

3,785,870

METHOD AND APPARATUS FOR THE REMOVAL OF CARBON DIOXIDE FROM GAS MIXTURES AND FUEL CELL COMBINATION

August Winsel, Kelkheim in Taunus, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed Mar. 24, 1972, Ser. No. 238,249

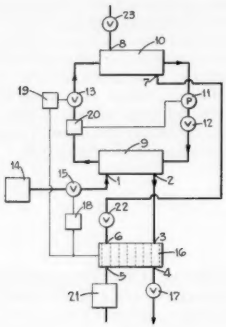
Claims priority, application Germany, Mar. 27, 1971, P 21 14 920.2

Int. Cl. H01m *27/12*

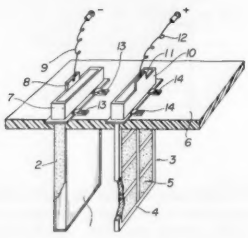
U.S. Cl. 136—86 C **23 Claims**

Carbon dioxide is removed from a gaseous mixture containing carbon dioxide and hydrogen by washing the gas mixture

with a liquid in an absorber where the carbon dioxide is absorbed, and desorption thereof in a desorber. The absorber and desorber contain a biporous element having a pore system of high capillary pressure and a pore system of low capillary pressure.



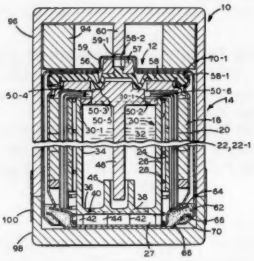
3,785,871
BRINE BATTERY
Masahide Ichikawa, No. 13-11, 1-chome, Hino, Tokyo, Japan
Filed July 10, 1972, Ser. No. 270,545
Int. Cl. H01m *17/00*
U.S. Cl. 136—100 M **4 Claims**



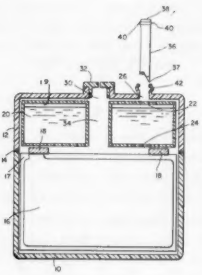
The present invention relates to a brine battery comprising an anode body made of metallic magnesium or a compound thereof and a cathode body made of an oxide of lead, both of these electrodes being fixedly secured to an insulating mounting plate at mutually opposed position, both said electrodes being further capable of being freely soaked into or taken out of non-tight-enclosed brine or sea water.

3,785,872
COMBINATION RESERVE CELL AND HOUSING
John Zaleski, Pleasantville, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed May 8, 1972, Ser. No. 253,671
Int. Cl. H01m *2/10*
U.S. Cl. 136—114 **8 Claims**

A reserve cell designed to be activated by a push-pin, and provided with a sealed enclosure having a guide hole of small dimension to prevent temptation of tampering and activation when openly exposed, and a protective housing for the cell embodying a push-pin element to serve as a tool to activate the cell when deisred, with means serving as a detent to prevent undesired activation by said housing.



3,785,873
ACTIVATED BATTERY
Jeffrey S. Leeson, and Robert P. Laczko, both of Cuyahoga, Ohio, assignors to ESB Incorporated, Philadelphia, Pa.
Filed July 3, 1972, Ser. No. 268,877
Int. Cl. H01m *2/00*
U.S. Cl. 136—114 **13 Claims**

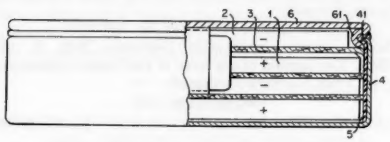


A storage battery cell having a dry element includes a reservoir containing an electrolyte precursor therewith. To activate the cell, it is filled with water after which the reservoir is punctured by the use of a specialized tool. The tool is forced through an opening in the battery cover puncturing first the top wall and then the bottom wall of the reservoir. In this position, the tool is locked in place against subsequent removal.

3,785,874
GAS-TIGHTLY CLOSED GALVANIC ELEMENT
Gerd Schenk, Iserlohn, and Werner Durhack, Hagen, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 28, 1972, Ser. No. 229,852
Claims priority, application Germany, Mar. 4, 1971, 7108128
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **2 Claims**

Gas-tightly closed galvanic element includes a cell container formed of a cup having an upper radially inwardly

directed flanged edge, a cover for the cell container formed with a radially inwardly directed indentation, the flanged edge



of the cup being pressed into the indentation formed in the cover, and a sealing ring interposed therebetween.

3,785,875

ZINC-CADMIUM ANTIMONIDE SINGLE CRYSTAL ANISOTROPIC THERMOELEMENT

Izrail Moiseevich Pilat, ulitsa Zankovetskaya, 15, kv. 29; Anatoly Grigorievich Samoilovich, ulitsa Universitetskaya, 13, kv. 4; Kornei Denisovich Soliichuk, ulitsa Lenina, 145, kv. 28, all of Chernovtsy, and Eduard Vaganovich Osipov, ulitsa Lasovskogo, 3a, kv. 32, Kiev, all of U.S.S.R.

Continuation of Ser. No. 226, Jan. 2, 1970, abandoned. This application Sept. 27, 1971, Ser. No. 184,275

Int. Cl. H01v *1/20*

U.S. Cl. 136—205 **5 Claims**

An anisotropic thermoelement is manufactured from one single crystal possessing anisotropic thermal electromotive force in at least two mutually perpendicular directions. A temperature gradient applied to said single crystal at some angle relative the direction of anisotropy of the thermal electromotive force causes the emergence of electromotive force in a direction perpendicular to that of the temperature gradient applied. Used as the single crystal is $Zn_xCd_{1-x}Sb$ solid solution, where x assumes a value greater than zero but less than unity; in a limiting case has a value of 0.99 recurring.

3,785,876

TREATING NICKEL BASE ALLOYS

Ronald E. Bailey, New York Mills, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,858

Int. Cl. C22f *1/10*

U.S. Cl. 148—2 **20 Claims**

A method of treating a nickel base alloy so as to produce an alloy having a structure characterized by dispersed discrete fine spherical carbides. The method comprises the steps of casting an ingot of nickel base alloy, homogenizing the ingot at a temperature of from 2,200° to 2,400° F so as to dissolve primary carbides present in the alloy and increase the chemical homogeneity thereof; cooling the ingot at least to a temperature of from 1,750° to 2,185° F at a rate which substantially precludes the precipitation of coarse and film-like carbides; and hot working the ingot with the primary carbides in solution with sufficient intensity to cause dispersed discrete fine spherical carbides to precipitate.

3,785,877

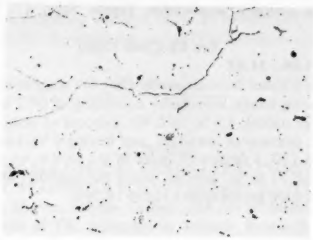
TREATING NICKEL BASE ALLOYS

Ronald E. Bailey, New York Mills, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,859

Int. Cl. C22f *1/10*

U.S. Cl. 148—2 **17 Claims**



A method of treating a nickel base alloy so as to produce an alloy having a structure characterized by dispersed discrete fine spherical carbides. The method comprises the steps of casting an ingot of nickel base alloy, homogenizing the ingot at a temperature of from 2,200° to 2,400° F so as to dissolve primary carbides present in the alloy and increase the chemical homogeneity thereof, cooling the alloy at a rate which substantially precludes the precipitation of coarse and film-like carbides at temperatures above 1,900° F and at a second rate in which dispersed fine spherical carbides precipitate at temperatures below 1,900° F; and hot working the alloy at a temperature lower than that at which the primary carbides dissolve.

3,785,878

TREATMENT OF METAL ROD OR WIRE

Mario Economopoulos, Liege, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed Aug. 18, 1970, Ser. No. 64,772

Claims priority, application Belgium, Aug. 19, 1969, 757682; Nov. 14, 1969, 741754; Feb. 13, 1970, 745999; July 10, 1970, 42902; July 10, 1970, 42903; July 10, 1970, 42905; July 14, 1970, 42910; July 14, 1970, 42911

Int. Cl. C21d *1/60, 9/52*

U.S. Cl. 148—18 **19 Claims**

The process is particularly applicable to steel rod or wire. Metal rod or wire is cooled from a temperature at which the metal is in a first stable phase to a temperature at which the metal is in a second stable phase. Part of the cooling is by means of a liquid consisting of an aqueous fluid containing, in suspension and/or solution, one or more substances which modify the heat transfer conditions of the aqueous fluid. The liquid is at a temperature greater than 80° C and above 75 percent of its boiling temperature expressed in degrees centigrade. The heat transfer conditions of the liquid and the duration of cooling by means of the liquid are such that all, or the major part, of the optimum allotropic transformation of the metal takes place during cooling by means of the liquid.

3,785,879

MAGNESIUM OXIDE COATINGS

Leonard S. Lee, Daly City; Yoshio Uyeda, and Leo F. Heneghan, both of San Mateo, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 64,644, Aug. 17, 1970, Continuation of Ser. No. 40,479, May 22, 1970. This application Mar. 20, 1972, Ser. No. 236,250

Int. Cl. B23k *35/24*

U.S. Cl. 148—27 **4 Claims**

Lithium additives in magnesium oxide/magnesium hydroxide coatings for silicon steel and the material coated by such process.

3,785,880

NI-FE-TA ALLOYS FOR MAGNETIC RECORDING-REPRODUCING HEADS

Hakaru Masumoto, Sendai; Yuetsu Murakami, Izumi-machi, and Masakatsu Hinai, Natori, all of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys

Filed Aug. 23, 1971, Ser. No. 173,964

Claims priority, application Japan, Sept. 17, 1970, 45-80903

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **4 Claims**

A heat-treated ferromagnetic alloy for magnetic recording-reproducing heads, essentially consisting of 60.2 to 85.0 Wt. percent of nickel, 6.0 to 30.0 Wt. percent of iron, and 3.1 to 23.0 Wt. percent of tantalum, and having a Vickers hardness of above 150, a degree of order of 0.1 to 0.6, an electric resistivity of 23 to 94 $\mu\Omega$-cm, initial permeability above 3,000 and maximum permeability above 10,000.

3,785,881

METHOD OF MANUFACTURING A BODY HAVING ANISOTROPIC PERMANENT MAGNETIC PROPERTIES BY GRINDING WITH FATTY LIQUID

Pieter Aart Naastepad, and Gijsbertus Gerardus Van Liempd, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,201

Claims priority, application Netherlands, Apr. 6, 1971, 7104566; Mar. 11, 1972, 7203267

Int. Cl. H01f *1/02*

U.S. Cl. 148—103 **3 Claims**

A method of manufacturing a non-ageing sintered rare earth-cobalt magnet having an optimum coercive force and shape of the demagnetization curve, by sintering above a given critical temperature and by maintaining during the whole manufacturing process the oxygen content of the product below a particular critical value. This is realized in particular by starting from a powder which has been ground in the presence of a fatty liquid having the property of readily wetting metal surfaces, as a result of which the powder grains are enveloped by a layer protecting against oxidation.

3,785,882

CUBE-ON-EDGE ORIENTED SILICON-IRON HAVING IMPROVED MAGNETIC PROPERTIES AND METHOD FOR MAKING SAME

John M. Jackson, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Dec. 21, 1970, Ser. No. 100,504

Int. Cl. H01f *1/04*

U.S. Cl. 148—113 **1 Claim**

Cube-on-edge oriented silicon-iron having improved magnetic properties and a glass free surface, and method for making it, wherein prior to the final anneal, the silicon-iron is coated with an annealing separator comprising a coarse, high purity alumina. The alumina separator may contain additives such as a grain growth inhibitor, a binder, and a compound which will aid in the removal of sulfur from the silicon-iron during the secondary grain growth stage of the final anneal but will not contaminate or form a film on the surface of the silicon steel.

3,785,883

METHOD OF OPERATION WHEN HOT STRAIGHTENING ELONGATED WORKPIECES

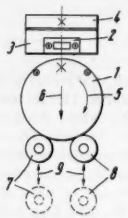
Gerhard Seulen, and Friedhelm Reinke, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed June 5, 1972, Ser. No. 259,663

Claims priority, application Germany, July 5, 1971, 1552854. The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.

Int. Cl. C21d *1/78*

U.S. Cl. 148—131 **6 Claims**



An improvement in a method of hot straightening workpieces as described in U.S. Pat. Nos. 3,598,665 and 3,631,698 whereby a workpiece is inductively heated and, at the same time, the induction currents in the workpiece generate, together with the inductor current, a force thrusting the workpiece against stops advanced for that purpose. In order to avoid reduction in reverse bending and/or tortional strength, according to the method of this invention the stops are advanced into contact with the workpiece only after at least 75 percent and preferably 85 percent of the total energy required for heating the workpiece has already been supplied.

3,785,884

METHOD FOR DEPOSITING A SEMICONDUCTOR MATERIAL ON THE SUBSTRATE FROM THE LIQUID PHASE

Harry Francis Lockwood, New York, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,752

Int. Cl. H01l *7/38*

U.S. Cl. 148—171 **1 Claim**

A layer of a semiconductor material is epitaxially deposited on a substrate by liquid phase epitaxy wherein a heated solution of the semiconductor material dissolved in a molten solvent is brought into contact with a surface of the substrate and the solution and substrate are cooled to deposit the semiconductor material on the substrate. During the cooling of the solution and the substrate heat is radiated from the substrate faster than from the solution so that the substrate is at a temperature slightly below the temperature of the solution. The heat radiation differential can be achieved by carrying out the method in a container having a heat radiation window therethrough over which the substrate is mounted.

3,785,885

EPITAXIAL SOLUTION GROWTH OF TERNARY III–V COMPOUNDS

Louis Earl Stone, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 24, 1970, Ser. No. 22,270

Int. Cl. H01l *7/38*

U.S. Cl. 148—172 **8 Claims**

The epitaxial solution growth of ternary III–V compounds, including gallium aluminum arsenide, for example, is controlled to accomplish uniform composition over extended growth periods. In a system comprising (1) a binary III–V

compound substrate, (2) a solution of the ternary compound in the Group III element of the substrate, saturated with respect to the substrate compound, and (3) a solid source of the ternary compound in contact with the solution a short distance from the substrate, the necessary control is achieved by maintaining the substrate at least about 5° cooler than the solid source material spaced therefrom.

3,785,886

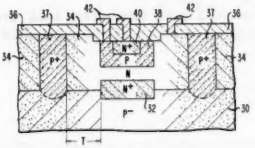
SEMICONDUCTOR DEVICE FABRICATION UTILIZING <100> ORIENTED SUBSTRATE MATERIAL

Paul P. Castrucci, Poughkeepsie; Edward G. Grochowski, Wappingers Falls; Martin S. Hess, Poughkeepie; George Maheras, Poughkeepsie, and William D. North, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 676,451, Oct. 19, 1971, Pat. No. 3,585,464. This application Feb. 22, 1971, Ser. No. 117,534

Int. Cl. H01l *7/36, 19/00*

U.S. Cl. 148—175 **6 Claims**



A method for fabricating a semiconductor device which is composed of a monocrystalline semiconductor body having a surface crystallographic orientation substantially parallel to a <100> plane and having a PN junction formed in the body. The body has an insulator coating, such as silicon dioxide, over the PN junction. The surface state density at the semiconductor-insulator interface is very low. This low density is believed to be a reason for the increased beta in the <100> oriented material semiconductor device. Further, the device has a low defect density and few dopant precipitate sites even at high dopant levels. A monolithic integrated circuit structure composed of the monocrystalline semiconductor substrate having a surface crystallographic orientation substantially parallel to a <100> plane with a plurality of semiconductor devices within the substrate is described. The devices may be isolated from one another by PN junctions. The tolerance in a given isolated device, between the PN junction and the nearest region having a different conductivity is less then approximately 0.3 mils. This very close spacing allows substantially greater compactness of semiconductor devices within a monocrystalline semiconductor body than has ever been previously accomplished.

3,785,887

HIGH ENERGY ACRYLIC PREPOLYMER PROPELLANTS OF LOW SENSITIVITY

Mart G. Baldwin, Newtown, Pa., and Paul H. Gehlhaus, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 5, 1970, Ser. No. 1,573

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **4 Claims**

High energy propellants of low sensitivity in the range of class 2 military explosives and propellants are disclosed. The propellants are comprised of acrylic copolymers, nitrate ester plasticizers, metallic fuel, inorganic oxidizer, and curatives. The acrylic copolymers are constituted of acrylic acid copolymerized with a nitrated acrylate selected from petrin acrylate and 2,2-dinitropropyl acrylate. The nitrate ester plasticizers are selected from triethylene glycol dinitrate, (TEGDN), trimethylolethane trinitrate, (TMETN), and butane-triol trinitrate, (BTTN). The metallic fuel is powdered aluminum, and the inorganic oxidizer is ammonium perchlorate. A commercially available diepoxide, such as dicyclo diepoxy carboxylate, is used as a curing agent. Compatible cross-linking catalyst such as ferric acetylacetonate may be used to decrease the curing time and/or temperature.

3,785,888

NITROCELLULOSE GAS-GENERATING COMPOSITION CONTAINING A POLYETHYLENE GLYCOL

Robert G. Shaver, Fairfax County, and Joe M. Burton, Alexandria, both of Va., assignors to Atlantic Research Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 274,055, April 18, 1963, abandoned. This application Nov. 6, 1964, Ser. No. 410,051

Int. Cl. C06b *15/00*

U.S. Cl. 149—38 **20 Claims**

This invention relates to nitrocellulose gas-generating compositions, and more particularly to gas-generating compositions containing nitrocellulose plasticized with polyethylene glycol and/or alkoxy-terminated polyethylene glycol.

3,785,889

EXPLOSIVE COMPOSITION CONTAINING TNT, HMX, AND RDX

Jean Vaganay, Avignon, and Robert A. Ousset, Sorgues, both of France, assignors to Societe Nationale Des Poudres et Explosifs, Paris, France

Filed Feb. 12, 1973, Ser. No. 331,496

Claims priority, application France, Feb. 21, 1972, 7205726

Int. Cl. C06b *15/02*

U.S. Cl. 149—92 **10 Claims**

A fusible explosive composition comprises 40–90% by weight of a crystalline explosive with a high detonation velocity and 60–10% by weight of 2,4,6-trinitrotoluene, the crystalline explosive with a high detonation velocity consisting of 10–50% by weight of octogen, that is cyclotetramethylenetetranitroamine and the remainder being hexogen, that is cyclotrimethylene-trinitroamine. The use of octogen causes a decrease in the melt viscosity and a decrease of deterioration, that is the increase in viscosity during successive fusions.

3,785,890

PROCESS FOR THE PREPARATION OF MERCURY-CONTAINING ALUMINUM HYDRIDE COMPOSITIONS

Alfred D. Cianciolo; Donald J. Sabatine, both of Hamden; James A. Scruggs, West Haven, and Samuel I. Trotz, Orange, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1963, Ser. No. 278,513

Int. Cl. C01f *7/50*

U.S. Cl. 149—109 **5 Claims**

A mercury-containing, non-solvated aluminum hydride composition is prepared by reacting HCl with an alkali metal aluminum hydride ($MAlH_4$) in the presence of a dialkyl ether solvent, adding mercury to the solvated aluminum hydride, formed by this reaction, and heating the product to drive off the solvent.

3,785,891

METHOD OF MANUFACTURING WIRES CONSISTING AT LEAST SUPERFICIALLY OF BORON AND WIRES OBTAINED BY SAID METHOD

Wubbe Vrieze, and Otmar Schob, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,378

Claims priority, application Netherlands, Oct. 21, 1970, 7015375

Int. Cl. C23f 17/00

U.S. Cl. 156—3 3 Claims

To enhance the tensile strength, boron-coated tungsten wire may be etched with an etchant comprising phosphoric acid, nitric acid and water.

3,785,892

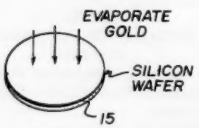
METHOD OF FORMING METALLIZATION BACKING FOR SILICON WAFER

Louis E. Terry, and Richard W. Wilson, both of Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 19, 1972, Ser. No. 255,170

Int. Cl. H01l 7/50

U.S. Cl. 156—3 10 Claims



A wafer of semiconductive material used to form beam lead devices is temporarily bonded face down to a sapphire base member with a low melting temperature wax. A layer of chromium or titanium then is vacuum deposited onto the back of the chip followed by vacuum deposition of a layer of gold. The chromium forms a good low temperature bond to the silicon and the gold in turn forms a good low temperature bond to the chromium so that the gold-chromium layers adhere tightly to the silicon through subsequent etching and separation steps. After the wafer is separated into individual chips or dice, a gold-silicon eutectic bond is formed by heating the chips to the eutectic temperature, with the gold-silicon alloying taking place by a diffusion of the gold through the chromium layer.

3,785,893

METHOD FOR MANUFACTURING BELTS

Paul C. Rotondi, Cliffside Park, N.J., assignor to Dan Dee Belt & Bag Company, Inc., Hoboken, N.J.

Filed Jan. 27, 1972, Ser. No. 221,145

Int. Cl. B29c 17/00

U.S. Cl. 156—198 4 Claims

This invention is directed to a method for manufacturing glossy surfaced flat tubular plastic belts in which a belt tube having one end closed is formed with the glossy side in and inverted by being fitted over the closed end of a fabric sock and then the closed ends of both pieces are forced through and along the body of the sock, after which the sock is stripped from the inverted belt tube. The sock prevents contact between opposed portions of the glossy surface.

3,785,894

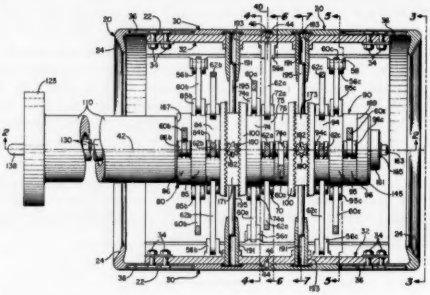
TIRE BUILDING DRUM

Jack A. Ling, Clinton, and Dennis W. Clem, Mogadore, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 12, 1971, Ser. No. 188,269

Int. Cl. B29h 17/16

U.S. Cl. 156—415 33 Claims



A collapsible tire building drum having deeply inwardly turned flanges which move inwardly with the drum segments as the drum is collapsed. The collapsing mechanism includes two pairs of counter-rotatable hubs. Pairs of links respectively connected to each of the pairs of hubs move the respective segments toward and away from the drum axis in response to equal and opposite rotation of the hubs relatively of the drum spindle.

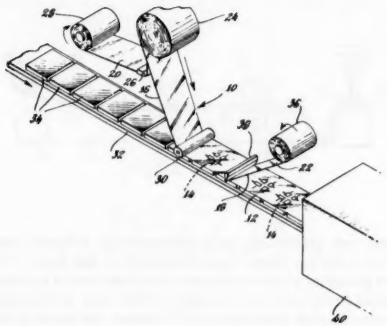
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,785,895

TAPE TRANSFER OF SINTERABLE CONDUCTIVE, SEMICONDUCTIVE OR INSULATING PATTERNS TO ELECTRONIC COMPONENT SUBSTRATES

Kitty S. Ettre, Norwalk, and George Richard Castles, Stamford, both of Conn., assignors to Vitta Corporation, Wilton, Conn.

Division of Ser. No. 860,866, Sept. 25, 1969, Pat. No. 3,665,496. This application Sept. 2, 1971, Ser. No. 177,481
Int. Cl. B32b 7/06
U.S. Cl. 156—89 6 Claims



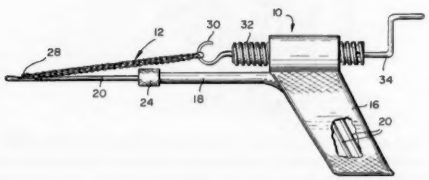
Conductive, semiconductive or insulating patterns such as fine line, thick film circuitry, or dot configurations are applied to electronic component substrates from a continuous transfer tape. In the transfer tape the patterns are formed with prearranged spacing on a heat decomposable carrier film, which in turn is supported on a backing strip and covered by a protective strip. In use the protective strip is peeled off and the patterns, still adhered to the carrier film and supported by the backing strip, are adhesively secured to a group or a continuously fed series of pre-aligned substrates. The backing strip is then peeled off, and the substrates with the applied patterns, not supported only by the heat decomposable carrier film, are placed in an oven for sintering and decomposition of the carrier film. The transfer tape and method of the invention lend themselves readily to automated, production-line procedures.

3,785,896

TIRE PUNCTURE REPAIR SYSTEM

Joseph B. Kassel, 150 E. 19th St., Brooklyn, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,856
Int. Cl. B60c 25/16
U.S. Cl. 156—97 12 Claims



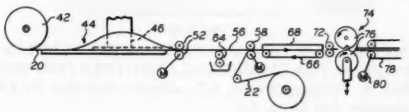
A tire puncture repair system includes an implement for forming a repair plug and inserting same into a tire casing to seal a puncture wound. The implement includes an insertion needle having a hook adjacent its free end and a gaff retractable away from the needle. To form a plug, an elastic loop constructed of an endless strand of non-circular transverse cross-section is placed between the needle hook and the gaff. The gaff is operable to simultaneously twist and stretch the strand into a helically convoluted elongated configuration. The plug thus formed is coated with a suitable cement and inserted through the puncture wound with the needle. The gaff is then returned to its original position and disengaged from the plug after which the needle is disengaged from the plug and withdrawn, leaving a stretched convoluted plug sealing the wound.

3,785,897

METHOD OF MAKING A DISPOSABLE DRAW SHEET

Fred W. Zipf, III, Rumson, N.J., assignor to Blessings, Inc., Bound Brook, N.J.

Division of Ser. No. 860,564, Sept. 24, 1969, Pat. No. 3,646,624. This application Mar. 6, 1972, Ser. No. 232,312
Int. Cl. B31f 1/00; A47g 9/00
U.S. Cl. 156—201 9 Claims



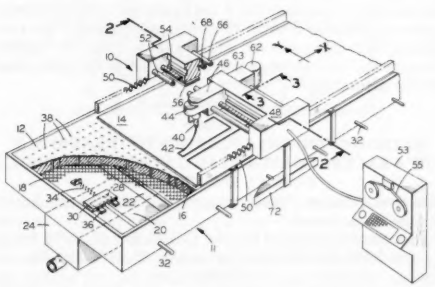
This method of making a draw sheet, suitable for hospital use, has plastic film to which is laminated a highly absorbent non-woven fabric over only that portion of the sheet which is on top when in use. The method is a continuous process that advances the web of plastic film from a supply roll and progressively folds film from both sides of the web over the top of the mid portion which is to be laminated to the absorbent material. The web becomes in effect a flattened tube. A web of the unwoven absorbent material is fed to the lower side of the flattened tube after adhesive has been applied to one of the webs to secure the absorbent material to the mid portion of the plastic web (i.e., bottom of the flattened tube). The laminated webs are cut into draw sheet length by a flying shear.

3,785,898

APPARATUS FOR PRODUCING SEAMED ARTICLES FROM SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Jan. 14, 1972, Ser. No. 217,921
Int. Cl. B26d 5/00; B05c 11/00
U.S. Cl. 156—353 13 Claims



A plurality of layers of sheet material, to be joined to one another along desired seam lines to produce garment components or other articles, are supported on a supporting surface. An applicator member movable in the plane of the supporting surface deposits a bonding agent along the seam lines. This deposition of the bonding agent may be made on the top surface of the first sheet prior to the spreading of the second sheet thereover or may be made on the top surface of the

second sheet after its spreading over the first sheet. The bonding agent is thereafter activated, if necessary, to cause it to adhere to and join together the two layers, and the layers are thereafter cut along or adjacent the seam lines to produce the finished articles. The applicator member is supported and moved along the seam lines by a carriage driven relative to the supporting surface by a numerically controlled drive system. The activation of the bonding agent and the cutting of the layers may be performed by an activating member and a cutting tool also driven along the seam lines by the numerically controlled drive system. The activating means may also be a means for applying activating energy and/or pressure over the entire area of the sheets. The bonding agent may also be supplied in the form of third sheet or film, in which case the applicator member may be omitted. Vacuum may be used to hold the sheets in place during the various operations performed thereon and in particular to press the two sheets to one another during the activation of the bonding agent.

3,785,899

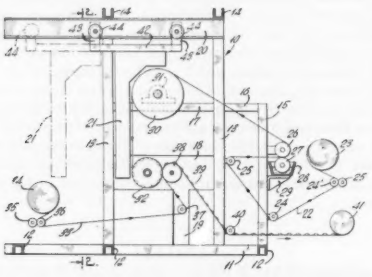
METHOD FOR THE MANUFACTURE OF CELLULAR MATERIAL FOR CUSHIONING AND OTHER PURPOSES

Alfred W. Fielding, Wayne, N.J., assignor to Sealed Air Corporation, Fair Lawn, N.J.

Filed June 8, 1971, Ser. No. 150,954

Int. Cl. B32b *31/16*

U.S. Cl. 156—209 **8 Claims**



Method and apparatus for the manufacture of a cellular material which utilizes an embossing roller to emboss at least one film after being preheated to an embossing temperature. At least the embossed sheet preferably includes a coating of adhesive which is reactivated during the preheating procedure so that upon applying a second unheated film to the embossed film the individual embossments will be sealed. The preheating means is arranged so that it can be moved out of its normal operating position in order to enable termination of the embossing and sealing process, and means are utilized to rapidly interchange the embossing rollers to minimize the down time for the apparatus.

3,785,900

METHOD OF MOLDING PLASTICS TO THE SURFACE OF A BACKING MATERIAL IMITATIVE OF LEATHER, FABRICS AND THE LIKE

Elie Gras, Thonon, France, assignor to Etablissements Anver S.A., Paris, France

Continuation-in-part of Ser. No. 57,170, July 22, 1970, Pat. No. 3,705,071. This application Aug. 25, 1971, Ser. No. 174,818

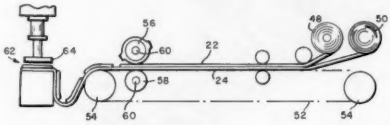
Claims priority, application France, Feb. 25, 1972, 69.2096624. The portion of the term of this patent subsequent to Dec. 5, 1989, has been disclaimed.

Int. Cl. B29b *3/00*

U.S. Cl. 156—245 **21 Claims**

A method of making parts of shoes and articles of wearing apparel of conventional materials such as leather and splits thereof, woven and non-woven fibrous materials, synthetic materials and the like to provide a surface configuration corresponding to a master pattern which desirably is to be imitated, comprising confining a layer of compressible absorbent material and a base plastic between a backing layer of which the part is to be comprised and a mold containing a cavity embodying the surface configuration to be reproduced on the surface of the backing layer, applying pressure and heat to cause the compressible absorbent material and the base plastic to become integrated with the backing layer, allowing the plastic to stabilize and stripping the composite structure from the mold.

According to the method the compressible absobent material may be in the form of a batt of thermoplastic fibers or foam



and the base plastic may be a thermoplastic in liquid, paste, sheet or solid dry blend form. Desirably, a thin layer of dissolved plastic or plastic monomer is sprayed on the surface of the mold cavity prior to disposition of the base thermoplastic and compressible absorbent layer between the backing layer and the mold and optionally a pigmented plastic may be deposited in the mold cavity at predetermined areas. The mold is prepared by casting a material having a lower dielectric constant than the plastic employed on a master pattern embodying the configuration to be imparted to the backing layer and preferably the aforesaid material of the mold is silicone rubber.

3,785,901

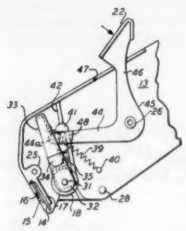
HAND OPERABLE TAPE DISPENSER AND APPLICATOR

George H. Fritzinger, 15 Standish Ave., West Orange, N.J.

Filed May 18, 1972, Ser. No. 254,428

Int. Cl. B32b *31/08*

U.S. Cl. 156—527 **7 Claims**



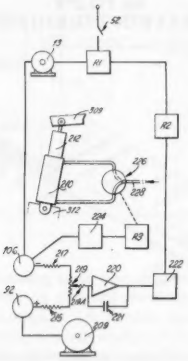
A portable dispenser and applicator has a handle and a support for a supply roll of tape, and a shiftable applicator roller locked normally in an operative position for applying the tape. A trigger extending from a head portion of the dispenser is depressible by a finger of the hand first to unlock the roller mounting and then retract the roller to enable the tape to be drawn against a tear-cut blade and to be cut. When the trigger is released the roller is shifted back to its locked operative position.

3,785,902

A WEB FEEDING AND SPLICING DEVICE

Edward George Preston, and Jerzy Wladyslaw Czoch, both of London, England, assignors to Molins Limited, London, England

Filed Feb. 4, 1971, Ser. No. 112,669
Int. Cl. B65h *25/00, 19/18*
U.S. Cl. 156—351 8 Claims



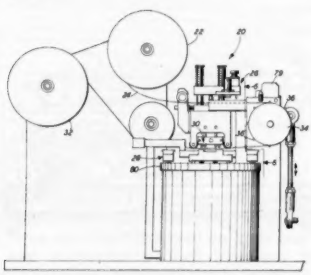
A web feedng and splicing device for a cigarette or other continuous rod making machine includes a reservoir in which a length of web is accumulated prior to splicing, the accumulation of sufficient web being sensed by an integrator responsive to the difference between the speeds with which the web is fed into and out of the reservoir.

3,785,903

LOADING OF COMPLIANT TAPE

John A. Boyer, Allentown; David P. Ludwig, and Friedrich Zwickel, both of Whitehall, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,648
Int. Cl. B32b *31/04;* B65c *11/04*
U.S. Cl. 156—356 12 Claims



Beam lead semiconductor devices are loaded onto an apertured compliant-bonding tape and held thereto with a releasable adhesive. The apertured tape is successively indexed through a loading machine. At one station, small accurately located dots of adhesive are applied to the tape. At a transfer station, integrated-circuit chips are pressed against the tape so that beam leads are secured to the dots of adhesive. Integrated-circuit chips are brought to the transfer station in spring-biased holding nests mounted on an indexable turret.

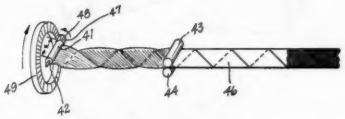
The compliant tape is embossed to form protective pockets therein so that when integrated-circuit chips are loaded onto the tape, subsequent winding of the tape onto a reel will not damage the chips.

3,785,904

APPARATUS FOR MAKING CROSS-LAPPED SPREAD WEBS

George A. Watson, Davidson, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 871,079, July 25, 1969, Pat. No. 3,623,927, which is a division of Ser. No. 606,984, Jan. 3, 1967, Pat. No. 3,515,621. This application Oct. 6, 1971, Ser. No. 186,879
Int. Cl. B32b *5/08;* D04h *3/05*
U.S. Cl. 156—441 5 Claims



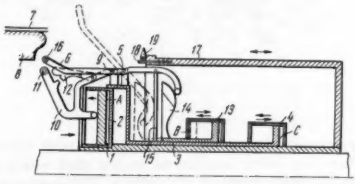
Apparatus for making non-woven fabrics which look like woven cloth by striating a web of crimped parallel filaments, setting the striated web, and cross-lapping the striated web.

3,785,905

EQUIPMENT FOR BUILDING PNEUMATIC TYRES

Petr Fedorovich Badenkov, prospekt Mira, 112, KV. 234; Leonid Venediktovich Petrokas, ulitsa Karla Marxa, 21/4, kv. 31; Gennady Lazarevich Portny, ulitsa 2 Kabelnaya, 10, kv. 64; Regina Lazarevna Pukhova, 15 Parkovaya, 53, korpus 2, kv. 72; Natalia Ivanovna Davidovich, Federativny prospekt, 26, korpus 2, kv. 20; Isaak Shlemovich Roitburd, Scherbakovskaya ulitsa, 20/24, kv. 85; Nikolai Sergeevich Tsaplin, pereulok Arkadia Gaidara, 5a, kv. 38; Valery Donovich Rossin, Studenchesky gorodok, MIFI, 8, kv. 21, all of Moscow, U.S.S.R., and Vladimir Alexandrovich Pinegin, deceased, late of Moscow, U.S.S.R. (by Margarita Vladimirovna Pinegina, administrator)

Filed June 28, 1971, Ser. No. 157,493
Int. Cl. B29h *17/12, 17/22*
U.S. Cl. 156—400 1 Claim



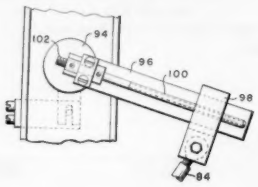
A mechanism for building in beads of pneumatic tires on a fixed tire building drum having at least one shoulder, in which there is provided a housing defined by a cylindrical support movable relative to the building drum, levers for compressing the ends of the cord plies against the drum shoulder, and an annular coil spring for turning over the cord ply ends, with the spring being secured on the levers serving to lift the spring. The levers for the compression of the cord ply ends and the lever for lifting the annular coil spring are hingedly secured with the possibility of axial rotation thereof on a common annular carrier or support axially movable relative to the body and the drum. The levers f[illegible] the compression of the cord ply ends are pressed to the annu[illegible]r coil spring by the axial rotation of the levers with the aid of a template movable by a piston in an air cylinder-piston unit.

3,785,906

YARN FEED APPARATUS FOR PILE CARPET MACHINE

Robert C. Fay, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 27, 1972, Ser. No. 238,490
Int. Cl. D04h *11/04*
U.S. Cl. 156—435 **1 Claim**



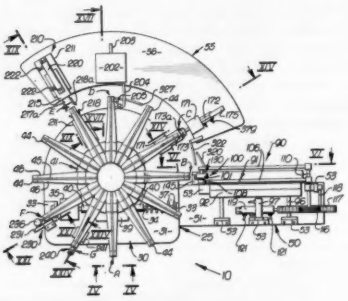
Clutch drive for the yarn feed rolls of a carpet machine which can be readily adjusted while the machine is in operation.

3,785,907

METHOD AND APPARATUS FOR AUTOMATIC ASSEMBLY OF A BELT AND ANCHOR PLATE

Richard S. Barr, and Richard L. Groendyke, both of Upland, Calif., assignors to American Safety Equipment Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 130,923
Int. Cl. B31f *1/00*
U.S. Cl. 156—443 **21 Claims**



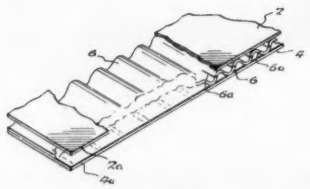
An apparatus and method for automatic assembly and interconnection of a safety belt and an anchor plate which is attachable to a frame member of a vehicle. The apparatus and method is embodied in a system for rapid production of such assembly wherein a plurality of anchor plate carrier arms are each sequentially positioned at a plurality of stations at which an anchor plate with a belt receiving opening therein is releasably positioned on the carrier arm, a pliant bendable belt is longitudinally folded at one end and advanced into and through said anchor plate opening for only a predetermined selected distance, the longitudinally folded belt is then transversely folded about the anchor plate, the folds are symmetrically arranged and creased, and the belt is then secured in assembly with the anchor plate in the bight of the belt thus formed by adhesively bonding and sewing the opposed belt portions together. The apparatus and method automatically accomplishes the assembly of the belt and anchor plate in a rapid virtually foolproof manner while providing a safety belt anchor connection capable of meeting safety regulations and Governmental standards.

3,785,908

FLUTE SEALING METHOD AND APPARATUS

William O. Wagers, Smithville; Robert H. Frappier, Wooster, both of Ohio; William S. McDonald, Georgetown, S.C., and Charles L. Boggs, Statesville, N.C., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 71,865, Sept. 14, 1970, Pat. No. 3,711,352, which is a division of Ser. No. 721,739, April 16, 1968, Pat. No. 3,563,843. This application July 13, 1972, Ser. No. 271,278
Int. Cl. B32b *3/04*; **B31f** *1/00*
U.S. Cl. 156—479 **4 Claims**



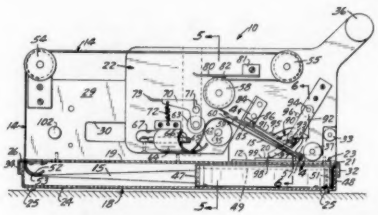
An apparatus for slitting, compressing, and folding a corrugated core paperboard, comprising means for slitting the end of the corrugated core, means for compressing the slit end inwardly to form extending facing sheet edges and means for folding the extending facing sheet edges, one over the other, to seal the flutes of the paperboard.

3,785,909

LABEL APPLYING DEVICE

Wilfred E. Stageberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 13, 1972, Ser. No. 243,647
Int. Cl. B44c *3/00*; **B32b** *35/00*
U.S. Cl. 156—541 **6 Claims**

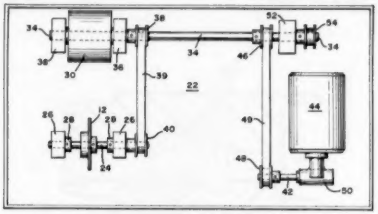


A device for applying a label from a supply of label stock in a predetermined position on an object. The device includes a first frame for positioning and supporting the object, and for movably mounting a second frame. The second frame is manually movable over the object on the first frame to dispense a label to the object from label dispensing means operated by relative movement of the frames and to press the dispensed label into engagement with the object on the first frame. The label dispensing means includes a novel indexing means for positioning the next label to be dispensed in a predetermined position on the second frame for a subsequent label application.

3,785,910
ULTRASONIC SEAMING APPARATUS INCLUDING FEED MEANS

Frank Parry, Monroe, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed May 1, 1972, Ser. No. 248,943
Int. Cl. B32b *31/16*
U.S. Cl. 156—580 **3 Claims**

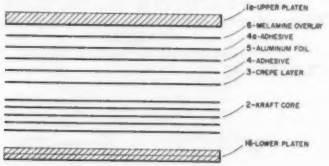


An ultrasonic seaming apparatus comprising a driven anvil wheel and an oppositely disposed resonating horn forming a seaming station through which flexible sheet material to be seamed is fed includes a driven workpiece feed wheel which is resiliently urged toward contact with the anvil wheel for assisting in feeding the seamed portion of the workpiece away from the seaming station. This arrangement minimizes the occurrence of puckering in sheer workpiece material. Additional workpiece feed means in the form of driven rollers are mounted distanced from the stated workpiece feed wheel.

3,785,911
METALLIC APPEARING LAMINATE

Israel S. Ungar and Herbert I. Scher, Randallstown, Md., assignors to Esso Research and Engineering Company

Continuation of abandoned application Ser. No. 834,610, June 13, 1969. This application June 29, 1971, Ser. No. 157,914
Int. Cl. B44f *7/00*
U.S. Cl. 161—5 **4 Claims**



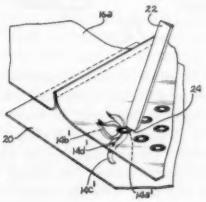
A decorative hammered metal appearing laminate produced by interlaminating an aluminum sheet between a melamine layer and crepe mounted on kraft core at high pressures and temperatures. Such laminates find particular use in furniture, commercial case goods and architectural specifications.

3,785,912
JEWELRY DESIGN KIT AND METHOD FOR DESIGN

Edward B. Van Deusen, Laguna Beach, Calif., assignor to Van-Lightner, Inc., Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 227,774
Int. Cl. B44f *1/06*
U.S. Cl. 161—6 **3 Claims**

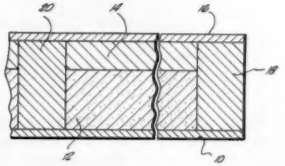
A jewelry design kit comprising (i) transfer sheets containing a plurality of decalcomania bearing indicia of jewelry elements such as, for example, precious stones and ring shanks; (ii) a means for transferring the decalcomania from a transfer sheet to a work sheet; and (iii) a plurality of pens of different colors. The present invention also includes a method for utilizing the jewelry design kit to create new and creative jewelry designs. The invented method comprises the steps of (i) locating or selecting a decalcomania bearing the indicia of a desired jewelry element from among those on one of the transfer sheets; (iii) transferring the selected decalcomania from the transfer sheet to a work sheet by rubbing the face of the transfer sheet above the decalcomania with the means for transferring; (iii) sequentially repeating the above steps for each jewelry element comprising the design until, by superimposition of the decalcomania on the work sheet, the design is complete; and (iv) coloring the jewelry elements comprising the design with the appropriate pens, especially the precious stones. The present invention enables an unlimited number of new jewelry designs to be made in their actual size or to scale with accuracy and convenience, without any particular artistic skill or training on the part of the user.



3,785,913
PREFABRICATED CONSTRUCTION PANEL

Lloyd G. Hallamore, Long Beach, Calif., assignor to Hallamore Homes, Inc., Fountain Valley, Calif.

Filed Aug. 12, 1971, Ser. No. 171,064
Int. Cl. B32b *1/06, 3/06;* **E04c** *2/24*
U.S. Cl. 161—41 **13 Claims**



A structural panel particularly suitable for use as an exterior member of a building is disclosed. The panel includes an inner skin for providing a suitable internal wall finish and a weather resistant outer skin. A layer of rigid plastic foam is disposed adjacent the inner skin and a layer of compressible heat resistant and acoustically insulating material is disposed between the foam and the outer skin to accommodate the thermal expansion and contraction of the foam. Strengthening struts may be suitably positioned between the inner and outer skins of the panel to accommodate stresses as required by applicable building codes.

3,785,914
STRUCTURAL MATERIAL AND MEANS AND METHOD FOR MAKING IT
Harry A. King, 19361 Trino Circle, Yorba Linda, Calif. 92686
Filed July 8, 1971, Ser. No. 160,738
Int. Cl. B32b *3/28*
U.S. Cl. 161—133 16 Claims

Sheet material is made from a sandwich of a dried matrix slurry covered on both sides with a layer of fibrous material. This sandwich material is formed into corrugations having flat ridges prior to drying and hardening. The corrugations may take a number of forms including undulating or serpentine forms providing corresponding undulating ridges and also straight ridges. The sandwich sheets can be formed in a mechanism comprising travelling chains carrying arms with bars which form the desired shaped ridges. A structure is made up by over-laying a plurality of such corrugated sheets. Adjacent corrugated sheets are adhered to each other at the flat ridges. Advantages of structures made from this material reside in strength, rigidity, heat and sound insulation.

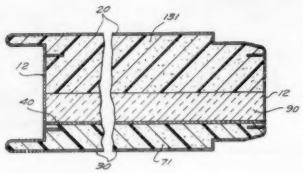
3,785,915
SHOE LINING AND COUNTER STIFFENER
Addison Walker Closson, Jr., 30 Coolidge Ave., Cambridge, Mass. 02138
Continuation-in-part of abandoned application Ser. No. 691,287, Dec. 18, 1967. This application Aug. 24, 1970, Ser. No. 66,634
Int. Cl. A43b *13/42*
U.S. Cl. 161—150 3 Claims

A shoe lining and counter stiffener is made from a multiply laminate having a ply of a nondirectional nonwoven fabric and a ply of thermoplastic (elastomeric) film material. To facilitate application of the laminate to a shoe, a thermally tackified adhesive is applied to the thermoplastic ply on the side opposite the fabric ply.

3,785,916
THERMOPLASTIC COMPOSITIONS
Cecil Nigel Turton, Darien, Conn., and James McAinsh, Northwich, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 9, 1971, Ser. No. 197,169
Claims priority, application Great Britain, Nov. 12, 1970, 53,836/70; May 25, 1971, 16,874/71
Int. Cl. B29c *27/00*
U.S. Cl. 161—156 5 Claims

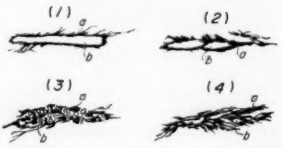
A composite having an aromatic polymer matrix reinforced by carbon fibres having length at least 2.5 cm.

3,785,917
STRUCTURAL UNITS
Reinhard Klinkosch, Dortmund, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany
Original application July 9, 1969, Ser. No. 840,397, now Patent No. 3,650,863. Divided and this application Sept. 8, 1971, Ser. No. 178,656
Claims priority, application Germany, July 17, 1968, P 17 79 192.3
Int. Cl. B32b *5/18*
U.S. Cl. 161—161 9 Claims



Laminar structural unit, composed of a pair of elongated spaced at least substantially parallel cover webs, two elongated layers of foamed synthetic plastic material each adhering to the inner surface of one of the aforesaid cover webs, an elongated intermediate web between these layers and adhering to one of them and an elongated intermediate layer between the intermediate web and the other of the layers; this latter elongated intermediate layer consisting of a material different from the foamed synthetic plastic material of which the aforesaid elongated layers consist.

3,785,918
REGENERATED CELLULOSE FIBROUS PRODUCT
Atsushi Kawai, Migaku Suzuki, and Hidenori Ohta, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1970, Ser. No. 82,276
Claims priority, application Japan, Oct. 24, 1969, 44/85,062
Int. Cl. B32b *5/02, 5/16*
U.S. Cl. 161—169 9 Claims



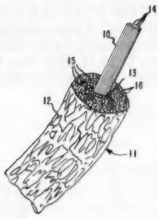
A fibrous product comprising a large number of regenerated cellulose fibril-like microfibers having a diameter of 0.1 to 5μ, at least a portion of said fibril-like microfibers being mutually entangled. The fibrous product, having a high water-retaining property and a high apparent degree of swelling, is obtained by introducing a viscose spinning dope into a coagulation liquid, wherein a reduced pressure generated by the high speed flow of said coagulation liquid is employed to apply a shear stress to the spinning dope.

3,785,919

COMPOSITE FILAMENT WITH ELASTOMERIC CORE AND MICROAPERTURED POLYPROPYLENE FOAM SHEATH AND PROCESS THEREFOR

Robert Winfield Hickman, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 94,821, Dec. 3, 1970. This application Nov. 9, 1971, Ser. No. 196,947
Int. Cl. B32b *5/18, 31/14;* D02g *3/22*
U.S. Cl. 161—175 7 Claims



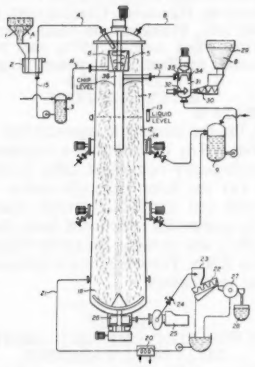
A microapertured foam of a polymeric material, such as polypropylene. The foam can be applied to an elastomeric core yarn, such as a spandex core, to form a sheath around the core. The foam sheath protects the core yarn from degradation, while improving dyeability, elongation-to-break, and other properties of the sheath-core composite filament over art-known composite filaments.

3,785,920

METHOD OF TREATING RAW CELLULOSIC MATERIALS

Thor H. Johansen, West Nyack, N.Y. (% American Defibrator, 405 Lexington Ave., New York, N.Y. 10017)

Filed Apr. 10, 1972, Ser. No. 242,423
Int. Cl. D21c *3/26*
U.S. Cl. 162—19 4 Claims



Method of treating raw cellulosic materials requiring different processing conditions in a vertical digester having a vapor phase cooking zone and/or a liquor phase cooking zone, one of the raw materials being fed into the vapor phase cooking zone for treatment therein for a predetermined period of time prior to moving into the liquid phase cooking zone, the other raw material being fed directly into the liquid phase cooking zone in the form of a central core free of direct contact with the steam in the vapor phase zone during its passage therethrough.

3,785,921

PAPER REINFORCING COMPOSITION CONTAINING STARCH AND A STARCH-ACRYLAMIDE GRAFT POLYMER

Fumio Ide, Tsuneo Kodama, and Yahide Kotake, Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., and Nitto Kagyo Co., Ltd., both of Tokyo, Japan

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,595
Int. Cl. C08d *9/06;* D21h *3/08, 3/28*
U.S. Cl. 162—168 17 Claims

Paper reinforcing agent composed mainly of a polymer composition which includes a graft polymer, a water-soluble polysaccharide, and, if necessary, an acrylamide type random copolymer. The graft polymer is that having the water-soluble polysaccharide as its backbone polymer and a copolymer derived from a monomer mixture of acrylamide and an unsaturated carboxylic acid, as its branch polymer; said random copolymer is that which is derived from the aforesaid monomer mixture. The water-soluble polysaccharide content is 5–22% by weight based on the composition.

The paper reinforcing agent is obtained by polymerizing the aforesaid monomer mixture in the presence of the water-soluble polysaccharide, or by further adding thereto a suitable amount of the water-soluble polysaccharide and/or the acrylamide type random copolymer.

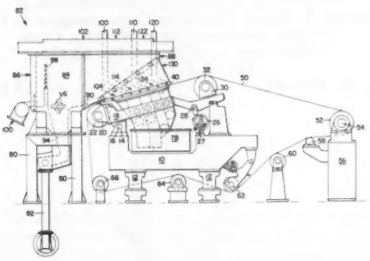
The reinforcing agent exhibits high paper-reinforcing property even in a small quantity and is markedly cheaper than any of the known acrylamide type paper reinforcing agents.

3,785,922

INCLINED FORMER

Martin B. Keller, Hudson Falls, N.Y., assignor to Sandy Hill Corporation, Hudson Falls, N.Y.

Filed May 27, 1970, Ser. No. 41,004
Int. Cl. D21f *1/24*
U.S. Cl. 162—299 3 Claims



A papermaking machine wherein stock is discharged from a stationary headbox for deposit on a web forming wire having a reach adjacent the headbox which is variably and selectively inclined upwardly between a lower rearward breast roll toward an upper forward wire roll with a suction box assembly mounted with respect to and beneath the upwardly inclined reach, there being provided a plurality of pairs of selectively employable side pond plate extensions of differing dimensions, each side pond plate extension of a pair being mounted in overlapping relation with a respective side wall of the headbox and in a tight sealed relationship with the suction box assembly and its supported inclined reach of the forming wire

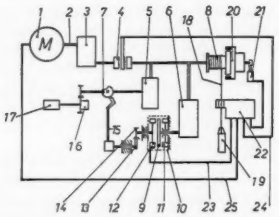
for accommodating the headbox to different angular positions of adjustment of the inclined reach of the forming wire.

3,785,923

COMBINED EMERGENCY SWITCH-OFF AND CONTROL ROD DRIVE FOR CONTROL ROD OF A GAS-COOLED NUCLEAR REACTOR

Tihomir Bratoljic, Wettingen, and Josef Waldis and Max Zimmermann, Untersiggenthal, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 22, 1971, Ser. No. 126,495
Claims priority, application Switzerland, Mar. 25, 1970, 4,485/70
Int. Cl. G21c 7/14
U.S. Cl. 176—36 R 3 Claims



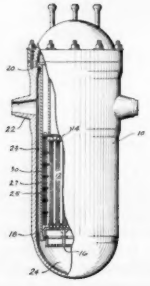
A combined emergency switch-off and control rod drive for a control rod of a gas-cooled nuclear reactor includes an electrical motor coupled through a clutch to a cable winch on which is wound a cable connected to the control rod for lowering rod into the reactor core. One brake of the eddy current type, is provided for controlled braking of the cable and a second, locking brake is provided for purposes of emergency, this locking brake being actuated in accordance with the response of a cable monitoring device which is arranged to detect both a relief of the cable as well as an overload thereon.

3,785,924

NUCLEAR REACTOR CORE SHROUD

Gennaro V. Notari, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 2, 1970, Ser. No. 68,878
Int. Cl. G21c 19/28
U.S. Cl. 176—61 10 Claims



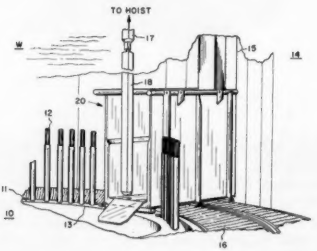
A core shroud comprised of a plurality of vertically stacked cylindrical thermal shields resting on a core support plate. Horizontal plates closely conforming to the core shape are sandwiched between each thermal shield. The inner thermal shield sections have vertical plates in the form of angles welded to the interior in a manner generally conforming to the periphery of the core. An outer thermal shield surrounds each of the inner thermal shields. Vertical tie bolts located in the annular space between the two shields maintain a resiliently compressive force on the stacked array of thermal shields and horizontal plates. A core support barrel surrounds the shield and the structure has openings to permit downward flow of some of the coolant through the various annular spaces formed by the shields prior to passage of coolant through the core.

3,785,925

PORTABLE RADIATION SHIELD FOR NUCLEAR REACTOR INSTALLATION

Cecil R. Jones, Milford, Conn., assignor to Transfer Systems Incorporated, New Haven, Conn.

Filed Nov. 1, 1971, Ser. No. 194,665
Int. Cl. G21c 11/00
U.S. Cl. 176—87 13 Claims



A portable radiation shield for a nuclear reactor is described. The shield is positioned between the reactor vessel and the fuel pool canal during fuel transfer therebetween. It features dual sets of lifting lugs, and flared rails and a removable plate to guide the fuel to a safer location in case of an accidental fall.

3,785,926

PROCESS FOR THE ENZYMATIC REPRODUCTION OF INFORMATIONALLY ACTIVE RNA

Diether Jachertz, Hannover, Germany (% Farbwerke Hoechst AG., Frankfurt am Main, Germany)

No Drawing. Filed Aug. 4, 1970, Ser. No. 60,922
Claims priority, application Germany, Aug. 16, 1969, P 19 41 709.5
Int. Cl. C12d 13/06
U.S. Cl. 195—28 N 1 Claim

A process for the enzymatic reproduction of informationally active RNA, by isolating a replicating enzyme from immunologically competent cells, incubating it together with (a) the informationally active RNA to be reproduced and (b) a cell-free system made from immunologically competent cells freed from the replicating enzyme, at pH 5, and isolating the newly formed informationally active RNA. The use of such informationally active RNA for vaccination.

3,785,927

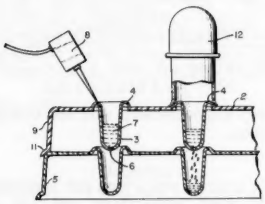
PROCESS FOR CONVERTING (−)RETICULINE TO (+)SALUTARIDINE

Erwin F. Schoenewaldt, Watchung, and Ernel D. Ihnen, Warren Township, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,394
Int. Cl. C12d 1/00
U.S. Cl. 195—51 R 21 Claims

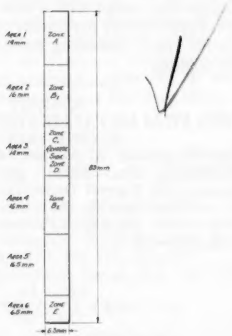
(+)salutaridine is produced by reacting (−)reticuline with an oxidative phenolic coupling enzyme produced by growing a suitable strain of Schizomycetes or Eumycetes in an aqueous nutrient medium.

3,785,928
BACTERIOLOGICAL TITRATION TRAY
Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512
Filed Jan. 27, 1971, Ser. No. 110,108
Int. Cl. C12k *1/10*
U.S. Cl. 195—140 2 Claims



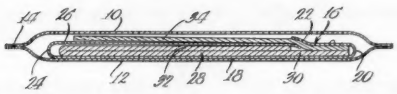
A molded plastic titration tray containing a large number of small open test cups serving as individual test tubes and which are integral with the tray and project downwardly from the tray except for a lip at the top of each cup which projects above the surface of the tray to prevent serum or solution spilled on the tray surface from contaminating the tray contents of the cup. In one modification there is a small hole in the bottom of each cup, small enough so that surface tension prevents the fluid contents of the cup from flowing through the hole, but the contents can be discharged at will by applying a sonic probe or air pressure to the cup.

3,785,929
DIAGNOSTIC COMPOSITION FOR THE DETECTION OF NITRITE
Donald P. Kronish, Rockaway, and William D. Young, Jr., Montclair, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of application Ser. No. 836,089, June 24, 1969, now Patent No. 3,645,853. This application Nov. 30, 1971, Ser. No. 203,289
The portion of the term of the patent subsequent to Feb. 28, 1989, has been disclaimed
Int. Cl. C12k *1/04*
U.S. Cl. 195—100 12 Claims



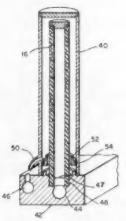
A diagnostic composition for the detection of the presence of nitrite comprises a carrier material impregnated in a specific zone with a dried form of two stable reagent solutions. In the preferred embodiment, the carrier material is also impregnated with a dried barrier composi- and an identifying dye. In use, the two zones containing the reagents are inserted into the fluid being tested and the positive presence of nitrite is indicated in 10 minutes or less by the formation of color in the reagent zones. The diagnostic composition of this invention provides a rapid, easy-to-use method for the detection of the presence of bacteriuria.

3,785,930
MICROBIOLOGICAL ACTIVITY TESTING DEVICE
R. James Ellis, Fort Wayne, Ind., assignor to Peter Eckrich and Sons, Inc.
Filed Dec. 22, 1971, Ser. No. 210,945
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 10 Claims



A device for determining microbiological activity in meats. A simple, economical and disposable testing device is provided by a folded-over transparent sheet to which is secured a sheet of a resazurin dye-containing material. A sample is brought, directly or indirectly, into contact with the sheet of dye-containing material and thereafter the transparent sheet is folded over the same to preclude moisture loss during incubation. Color change may be readily observed through the transparent sheet and the time required for color change taken as a measure of the microbiological activity in the meat.

3,785,931
SELF CLEANING, TUBULAR SOLAR STILL
James P. Coffey, Hatboro, and Joseph C. Duddy, Trevose, Pa., assignors to ESB Incorporated
Filed July 30, 1971, Ser. No. 167,751
Int. Cl. B01d *3/04*
U.S. Cl. 202—234 12 Claims



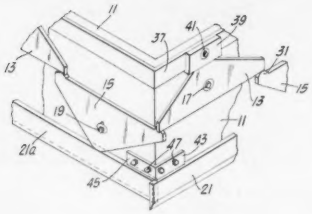
A solar still is described in which a vertical microporous evaporator having a dark outer surface is housed within but separated from a transparent tube. Impure or salt water is fed up the porous evaporator either by mechanical means or by capillary forces from a reservoir at the tube base. Sunlight impinging on the inner dark tube causes water to evaporate therefrom. The vapor subsequently condenses on the inner surface of the transparent tube and runs down to a collecting ring at the base thereof. Concentration effects cause concentrated impurities to flow down the porous evaporator so that its surface pores do not become clogged. The transparent outer tube may be glass or plastic. Its inner surface may be treated to cause the condensed water to run down as a sheet rather than collect as drops. Reflectors or other light directing means may be placed about the tube to gather and concentrate the solar radiation reaching the dark tube. In an alternate design, impure water is fed to the top of the porous evaporator.

3,785,932

SEALING DEVICE FOR COKE OVEN DOOR

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Feb. 1, 1972, Ser. No. 222,583
Int. Cl. C10b *25/06*
U.S. Cl. 202—248 3 Claims



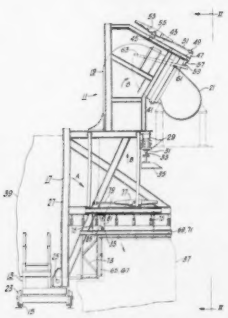
The perimeter of the door frame of a coke oven door is fitted with a sealing knife edge and a plurality of pivotal interacting levers mounted to the door frame. The levers exert uniform forces on the knife edge and the door jam when the door is in the closed position.

3,785,933

APPARATUS FOR COLLECTING AND REMOVING EFFLUENT EMITTED WHILE PUSHING COKE

William D. Edgar, Allison Park, and Albert G. Jonnet, Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Aug. 11, 1971, Ser. No. 170,926
Int. Cl. C10b *33/00*
U.S. Cl. 202—263 6 Claims



A gastight hood is mounted to a coke guide car. The hood is provided with a collar that cooperates with a fixed gas collecting main and with curtains that prevent gases, smoke and dirt from escaping from the quenching car while coke is being pushed.

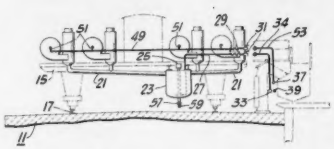
3,785,934

WATER SYSTEM FOR A LARRY CAR

Clifford W. Clarke, McMurray, Pa., assignor to Koppers Company, Inc.

Continuation-in-part of abandoned application Ser. No. 868,012, Oct. 21, 1969. This application June 23, 1971, Ser. No. 155,820
Int. Cl. C10b *27/04*
U.S. Cl. 202—263 6 Claims

Larry cars that are equipped with water scrubber type dust eliminators obtain clean water for such scrubbers from a circulating water header loop extending the length of a coke oven. A dirty water storage tank on the larry



car is emptied simultaneously with the charging of coal into a coke oven.

3,785,935

DISTILLATION PROCESS OF MONOMERS WITH THE ADDITION OF AN ANTI-FOAM COMPOSITION

Kermit W. Householder, Tonawanda, N.Y., and Van I. Doesburg, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed May 17, 1971, Ser. No. 144,264
Int. Cl. B01b *1/04*
U.S. Cl. 203—20 6 Claims

An antifoam composition which consists essentially of (1) 5 to 50 percent by weight of a silicone-glycol copolymer, (2) 5 to 50 percent by weight of a polypropylene glycol, (3) 5 to 50 percent by weight of a glycol copolymer, and (4) 40 to 85 percent by weight of water is disclosed. This composition is particularly useful in latexes.

3,785,936

ANODIZED ALUMINUM TEST PANEL FOR EVALUATING INSPECTION PENETRANT PERFORMANCE

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,984
Int. Cl. C23b *9/02*; C23f *17/00*
U.S. Cl. 204—38 A 3 Claims

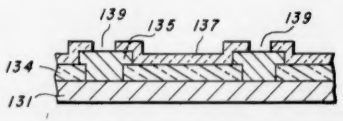
A test panel which may be used for evaluating inspection penetrant crack detection performance, the preferred structure of said panel being a sheet of aluminum anodized in a sulfuric acid bath to a controlled anodic film thickness between about 5 microns and 50 microns, heat sealed and coated with a thin glassy layer of sodium silicate, baked to cure the silicate layer, and stress cracked to provide cracks extending through the thickness of the anodic coating.

3,785,937

THIN FILM METALLIZATION PROCESS FOR MICROCIRCUITS

William Raymond McMahon, 432 Crestover Circle, Richardson, Tex. 75080, and Thomas Haliburton Ramsey, 602 Carroll Drive, Garland, Tex. 75040

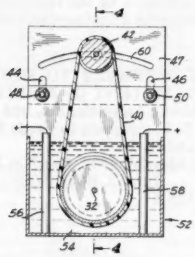
Filed Apr. 28, 1971, Ser. No. 138,223
Int. Cl. C23b *5/48*, *5/52*
U.S. Cl. 204—15 2 Claims



Selective anodic oxidation is employed to pattern thin metallic films in the fabrication of printed circuit boards and integrated microcircuits to provide "inlaid" metalliza-

tion geometry and thereby eliminate the need for selective etching of metal films. The total anodic conversion of metallic thin films to the corresponding oxide is demonstrated. Standard photolithographic masking techniques are employed to achieve selective anodic oxidation in the delineation of a single metal film, and also for each successive metallization layer in the fabrication of integrated microcircuits having multilevel, insulated, interconnecting metallization patterns.

3,785,938
METHOD FOR MAKING ABRASIVE ARTICLES
Ahmad Sam, 671 Forest Ave., Paramus, N.J. 07652
Filed Nov. 5, 1970, Ser. No. 87,177
Int. Cl. C23b *5/48, 5/68*
U.S. Cl. 204—16 **39 Claims**



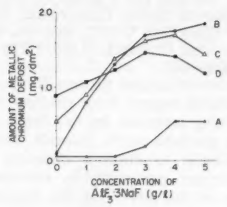
Depositing abrasive particles, such as diamonds, silicon carbide, titanium carbide, aluminum oxide, or mixtures thereof, in a matrix of electrochemically deposited metals on the outer periphery and/or the adjacent marginal side portions of metal (or non-metals) blanks or wheels.

3,785,939
TIN/LEAD PLATING BATH AND METHOD
Grace F. Hsu, Vernon, Conn., assignor to Conversion Chemical Corporation, Rockville, Conn.
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,229
Int. Cl. C23b *5/38, 5/40, 5/46*
U.S. Cl. 204—43 S **23 Claims**

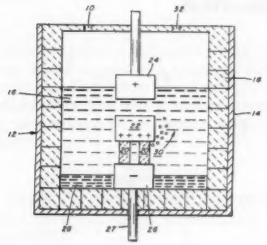
A plating bath for electrodeposition of tin/lead alloys contains stannous ion, lead ion, a fluoborate, fluosilicate or sulfamate radical and, as a brightener system, a nonionic polyoxyalkylated surfactant, a lower aliphatic aldehyde, an aliphatic or aromatic amine and an aromatic aldehyde, the pH of the bath being less than about 3.0.

3,785,940
METHOD FOR ELECTROLYTICALLY TREATING THE SURFACE OF A STEEL PLATE WITH A CHROMATE SOLUTION
Hidehisa Yamagishi, Yokohama, Hiroshi Takano, Kawasaki, and Masao Takeuchi, Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1973, Ser. No. 321,823
Claims priority, application Japan, Jan. 14, 1972, 47/6,313
Int. Cl. C23b *11/02;* **C23f** *17/00*
U.S. Cl. 204—56 R **3 Claims**

With respect to the prior art method which comprises immersing a steel plate as a cathode in an electrolyte in which there are dissolved chromic acid or salts thereof containing chromium VI oxide as a main agent and a thiocyanic compound as a promoting agent, and subjecting the surface of said steel plate to electrolytic treatment so as to improve its corrosion resistance and the adhesivity of paint thereto, it has been found that addition of aluminium sodium fluoride or aluminium potassium fluoride to said electrolyte as a second promoting agent will elevate the adhesivity of paint to the treated surface of the steel plate.



3,785,941
REFRACTORY FOR PRODUCTION OF ALUMINUM BY ELECTROLYSIS OF ALUMINUM CHLORIDE
Stanley C. Jacobs, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Sept. 9, 1971, Ser. No. 178,895
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—67 **21 Claims**



Selective interfacial bounding of molten metal chloride electrolyte by nitride-based refractory material in cells for production of aluminum and chlorine by electrolysis of aluminum chloride.

3,785,942
PROCESS FOR THE RECOVERY OF MERCURY FROM WASTE SOLIDS
Gordon A. Carlson, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 806,204, Mar. 11, 1969, now Patent No. 3,647,653. This application Mar. 8, 1972, Ser. No. 232,769
Int. Cl. C01b *7/06;* **C01d** *1/08;* **C22b** *43/00*
U.S. Cl. 204—99 **6 Claims**

Mercury is recovered from electrolytic cell caustic filter solids by treatment with a brine containing elemental chlorine in an amount sufficient to solubilize the mercury. The mercury containing brine can then be returned to the electrolytic cell.

3,785,943
ELECTROLYSIS OF MAGNESIUM CHLORIDE
Herbert Eberle, Hannover, Wolfgang Meyer, Benthe, and Johann Haase, Empelde, Germany, assignors to Salzdetfurth AG
No Drawing. Filed Nov. 23, 1971, Ser. No. 201,387
Claims priority, application Germany, Dec. 7, 1970, P 20 60 066.2
Int. Cl. C01b *7/06;* **C01f** *5/18*
U.S. Cl. 204—100 **11 Claims**

A process for the electrolysis of magnesium chloride solutions, in the presence of an alkali metal chloride to yield chlorine and magnesium hydroxide.

3,785,944
HYDROMETALLURGICAL PROCESS FOR THE PRODUCTION OF COPPER

George E. Atwood and Charles H. Curtis, Tucson, Ariz., assignors to Duval Corporation, Houston, Tex.

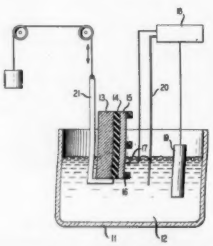
Filed Oct. 7, 1971, Ser. No. 187,393
Int. Cl. C22b *15/08*; C22d *1/16*
U.S. Cl. 204—107 36 Claims

A hydrometallurgical process for pollution-free recovery of metallic copper from chalcopyrite and other copper-containing materials by (a) ferric chloride oxidation thereof to produce cupric chloride, (b) reduction of the cupric chloride to cuprous chloride, (c) recovery of metallic copper, preferably by electrolysis, and (d) regeneration of the ferric chloride by oxidation with concurrent purge of excess iron as well as sulfate ions and other impurities. The process is amenable to steady state cyclic operation, and stages (d) and (a) may advantageously be combined.

3,785,945
TECHNIQUE FOR ELECTROLYTICALLY ETCHING TUNGSTEN

Donald Morley MacArthur, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 4, 1972, Ser. No. 250,258
Int. Cl. C23b *3/00*
U.S. Cl. 204—129.95 4 Claims



A technique for electrolytically etching tungsten films involves the use of borate phosphate and carbonate buffered electrolytes having a pH within the range of 7.0 to 10.5. The described process permits automation of the etching process and eliminates the formation of isolated islands of unetched materials.

3,785,946
PROCESS FOR ELECTROCOATING ALUMINUM ARTICLES

Shiro Terai, Toshio Suzuki, Yoshihumi Hasegawa, and Hitoshi Sekiya, Nagoya, and Hiroto Matuo and Shizuo Kimata, Tokyo, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Sumitomo Light Metal Industries, Ltd., and Dainichiseika Color & Chemicals Mfg. Co. Ltd., Tokyo, Japan

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,431
Claims priority, application Japan, Sept. 10, 1971, 46/69,731
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 15 Claims

In a process for electrodeposition-coating an aluminum article which comprises subjecting the aluminum article to anodic oxidation treatment, dipping the anodized aluminum article in an aqueous emulsion or solution of a thermosetting resin composition, applying a direct current to the aluminum article to electrodeposit thereon the resin contained in said aqueous emulsion or solution, and then heat-curing the resin coating electrodeposited on the aluminum article, an improvement characterized in that onto the surface of the anodized aluminum article is applied, prior to the electrodeposition, an aqueous solution, aqueous dispersion or organic solvent solution of an organo-silicon compound represented by the general formula,

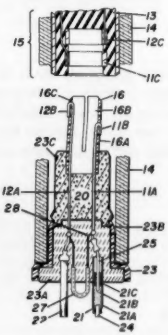
$$[R\{CH_2\}_n\}_m—Si—X_{4-m}$$

wherein m is an integer of 1 to 3; n is 0 or an integer of 1 to 3; R, in the case where n is 0, is a lower alkenyl group, and R, in the case where n is an integer of 1 to 3, is an amino group, an alkylenediamino group, a lower alkanolamino group, an α,β-unsaturated lower aliphatic carboxylic acid residue, or an alkoxy or cycloalkyl group having an epoxy group; and X is at least one group selected from the group consisting of a lower alkoxy group, a lower alkoxyalkoxy group, a saturated lower aliphatic carboxylic acid residue, a hydroxyl group and a lower alkyl group, excluding the case where all the groups represented by X are lower alkyl groups at the same time. When such treatment with the organo-silicon compound is adopted, the adhesion of the resin coating and the corrosion resistance of the aluminum article is enhanced.

3,785,947
ELECTRODE ASSEMBLY TO DETERMINE THE OXYGEN CONTENT OF MOLTEN METAL

William H. Baldwin, Lansdale, Pa., and Harry G. Clauss, Jr., Beverly, N.J., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed May 26, 1972, Ser. No. 257,260
Int. Cl. B01k *3/00*
U.S. Cl. 204—195 S 5 Claims



An expendable, plug-in electrode assembly for insertion into a bath of molten material to form a galvanic cell comprised of solid state electrolyte connected on one side to a solid state reference electrode and on the other side connected to a connector electrode through a liquid containing a constituent in an amount to be determined. The electrode assembly is characterized by the inclusion of a thermal switch connected across the electrical leads to the electrodes for use in checking the continuity of plug-in electrical connections and a measuring circuit prior to immersing the electrode assembly into a bath of molten material.

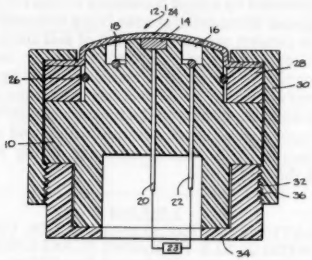
3,785,948
ELECTROCHEMICAL OXYGEN DETECTOR

Michael L. Hitchman, Wolfgang Mehl, and Jean Pierre Millot, Geneva, Switzerland, assignors to H. Dudley Wright, Cologny, Geneva, Switzerland

Filed Feb. 14, 1972, Ser. No. 226,037
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P 11 Claims

An electrochemical oxygen detector which is useful in a sulfurous environment contains a metal sulfide, such

as nickel, tungsten or cobalt sulfide, as a cathode. The anode is desirably silver sulfide. A detector having a nickel sulfide or a tungsten sulfide cathode and a silver sulfide anode is readily formed during use in a polluted environment from a detector having a nickel or a tungsten cathode and a silver anode without substantial variation in response characteristics. The electrolyte is desirably potassium chloride in water containing a chelating agent for reducible metal ions, for example sodium potassium tartrate, a buffer to maintain the pH in excess of 5, and a deliquescent agent, e.g. a mixture of potassium dihydrogen phosphate and disodium hydrogen phosphate dihydrate.



3,785,949

ELECTROLYSIS CELL WITH LIQUID ELECTRODE

Hermann Matthey, Herdekce-Kirchende, Stefan Payer, Holzen-Hochsten, and Eberhard Zirngiebl, Cologne-Stammheim, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,917

Int. Cl. C22d *1/04*; B01k *3/04*

U.S. Cl. 204—219 **3 Claims**

An electrolysis cell of the type employing a liquid electrode, such as mercury cathode is used for the alkaline chloride electrolysis process. The bottom of the cell is made up of an inexpensive material such as aluminum or aluminum alloy to which is bonded a thin layer having surface properties such as wettability, corrosion resistance, and little tendency to fouling. The thin layer may be a noble metal, a corrosion-resistant metal, such as nickel, a non-metallic conductor or a semi-conductor, or an electrically conducting ceramic material.

3,785,950

REGENERATION OF SPENT ETCHANT

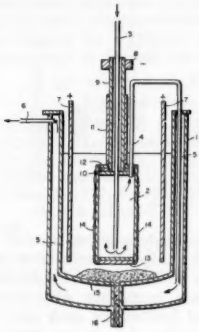
Emerson H. Newton, 39 Virginia Road, Arlington, Mass. 02175; John M. Ketteringham, Concord Road, Lincoln, Mass. 01773; John L. Sienczyk, 50 Williams St., Arlington, Mass. 02175; and Calvin M. Isaacson, 2 Oceanside Drive, Beverly, Mass. 01915

Original application Oct. 12, 1971, Ser. No. 188,189. Divided and this application May 19, 1972, Ser. No. 254,895

Int. Cl. B01k *3/00*; C22d *1/02*

U.S. Cl. 204—239 **8 Claims**

The invention relates to a process for extracting copper as metal from a used etchant solution containing complexed cupric ions as an oxidant while simultaneously regenerating the etchant for further use. The etchant treated may have a pH from below 0 to 13, but preferably has a pH of at least 3 and more preferably has a pH between about 4 and 10. The process comprises electrowinning a portion of the copper from solution under conditions effective for electrowinning but not etching. These conditions include a substantial freedom from oxygen in the vicinity of the cathode, high current density, a substantial freedom from solution agitation during the winning operation and preferably for good efficiency, low solution temperature at the interface of the solution and the cathode, typically below 140° F. The process is economical because in the preferred embodiment, a portion only of the copper in solution is removed, the remaining copper being left in solution and available as a source of cupric ion for reuse of the etchant. The process is an important contribution to pollution abatement efforts as it eliminates the need for dumping copper and other wastes resulting from an etching operation.



3,785,951

ELECTROLYZER COMPRISING DIAPHRAGMLESS CELL SPACES FLOWED THROUGH BY THE ELECTROLYTE

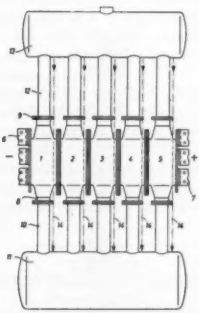
Jacques Fleck, Kehl (Rhine), Germany, assignor to Krebs & Cie, Paris, France

Filed Feb. 25, 1972, Ser. No. 229,278

Claims priority, application Germany, Mar. 2, 1971, P 21 09 949.0

Int. Cl. B01k *3/00*

U.S. Cl. 204—268 **12 Claims**



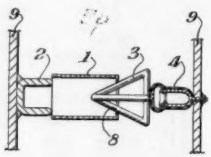
An electrolyzer of the type wherein electrolyte flows through diaphragmless cell-spaces which are in communication with each other only through a reaction vessel or a common collector and gas separator by means of pipe lines connecting given cell spaces thereto. Bipolar electrodes have lug-like anode portions protruding into the cell spaces adjacent lug-like cathode portions which also protrude into the cell spaces.

3,785,952

SUPPORT FOR MOUNTING SMALL PARTS IN ELECTROPLATING PROCESSES

Hermann Ritzenhoff, Marburg-Lahn, Germany, assignor to Gerbruder Seidel KG, Marburg-Lahn, Germany

Filed Oct. 30, 1972, Ser. No. 302,120
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 W **24 Claims**



Frame for supportingly securing number of small parts each having circular edge of perforation parallel with a supporting surface while parts are subjected to electrodeposition treatment comprises electrically conductive main structure and holders for each part to be treated. Main structure includes at least one electrically conductive metal web, and each holder comprises plurality of non-electrically conducting rods which converge toward point and which engage circular edge or perforation of parts to be treated. At least one resilient rail is constructed and arranged to press holders carrying parts to be treated against metal web.

ERRATUM

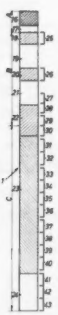
For Class 204—228 see:
Patent No. 3,785,954

3,785,953

PROCESS FOR CARRYING OUT ENDOTHERMIC CATALYTIC REACTIONS

Jean Patouillet, Paris, France, assignor to Societe Anonyme: Antar Petroles de l'Atlantique, Paris, France

Continuation-in-part of application Ser. No. 81,166, Oct. 15, 1970, which is a continuation of abandoned application Ser. No. 738,831, June 21, 1968. This application Nov. 9, 1971, Ser. No. 196,943
Int. Cl. C10g *39/00*
U.S. Cl. 208—49 **6 Claims**



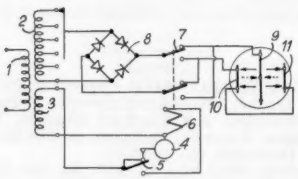
A reactor for carrying out endothermic reactions under substantially adibatic conditions comprising a plurality of tubes disposed vertically and a plurality of radiant heating means exterior to said tubes, means to introduce a gaseous feedstock into said tubes, said plurality of radiant heating means being disposed along said tubes in a vertical direction in spaced relationship dependent on the temperature of the endothermic reaction of said gaseous feedstock, at least part of said vertically disposed tubes defining catalyst zones, as well as the process for carrying out endothermic catalytic reactions in substantially endothermic conditions, consisting essentially in introducing the reaction stream into at least one catalysis zone consisting of at least one zone containing dilute catalyst and which can be preceded by a zone containing an inert catalyst support, the said dilute catalyst zone being followed by a conventional catalyst zone proper, each of said zones may further be separated from adjacent zones by intercalated zones containing no material, and/or positioning along the said zones a plurality of distinct heating means to provide variable amounts of heat to the reaction stream moving in each of said zones, the temperature within said stream being maintained substantially constant during its passage through the said zones.

3,785,954

APPARATUS FOR TREATING WATER CHARGED WITH SCALE FORMING SUBSTANCES

Jean Jacques Herbert, 8 Rue Thiers, Monthyon, France

Filed May 17, 1972, Ser. No. 254,063
Claims priority, application France, May 24, 1971, 7118569
Int. Cl. B01k *3/00*; C02b *1/82*
U.S. Cl. 204—228 **3 Claims**



Apparatus for treating water by electrical means in order to eliminate scale-generating substances, comprising electrodes dipping into the water to be treated and connected to the mains supply through a transformer having an adjustable secondary connected to a rectifier bridge which is in turn connected to the electrodes for the purpose of obtaining a chopped current having its direction periodically reversed by a timer. The electrodes are flat and are used in sets of three. Each set comprises a central electrode flanked by two parallel-connected lateral electrodes, the electrodes and their supporting current-supplying rods being made of stainless steel.

3,785,955

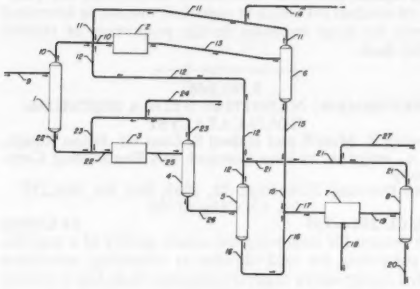
GASOLINE PRODUCTION PROCESS

William H. Davis, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 1, 1971, Ser. No. 203,802
Int. Cl. C07c *5/72*; C10g *31/14, 35/06*
U.S. Cl. 208—80 **7 Claims**

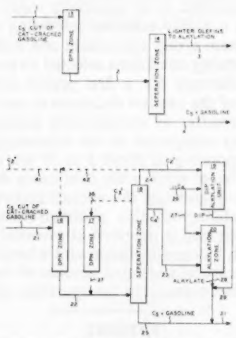
High octane gasoline is produced by isomerizing a C_4 through C_6 paraffin fraction from a straight run gasoline, the higher boiling portion of the straight run gasoline is passed into a reforming zone. The effluent from the isomerization zone is passed into a molecular sieve separation zone which separates normal paraffins from non-normals such as aromatics and iso-paraffins. A portion of the extracted normal paraffins are then recycled to the isomerization zone to effect further production of branched chain paraffins. The raffinate material recovered from the molecular sieve separation zone is sufficiently high in octane number to be utilized as a clear gasoline.

The reforming and isomerization zone effect the conversion of the respective feed to those zones through the use of suitable catalytic components. The separation zone



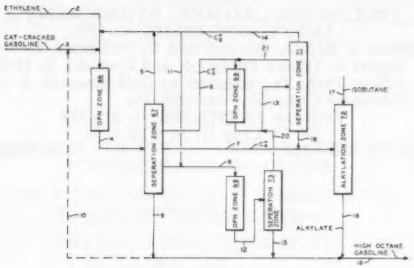
utilizes a Type A crystalline aluminosilicate to selectively extract normal paraffins from a feed containing normal paraffins and other non-normal components.

3,785,956
SELECTIVE OLEFIN DISPROPORTIONATION AND THE USE THEREOF TO PRODUCE HIGH OCTANE GASOLINES
Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 10, 1971, Ser. No. 206,734
Int. Cl. C07c *3/62*; C10g *37/06*
U.S. Cl. 208—93 **12 Claims**



The disproportionation of mixtures of branched and unbranched disproportionatable olefins in the presence or absence of ethylene is improved by adjusting the conversion to a specified level thereby increasing the selectivity of the reaction to the conversion of the unbranched olefins. The process has particular utility in increasing of the quality of olefinic gasoline streams in that the lower octane-rated unbranched olefins can be selectively removed from the gasoline by conversion to other olefins while substantially retaining the higher octane-rated branched olefins. In this aspect, a process for increasing the octane value of olefinic gasoline streams is provided which comprises the steps of separating a C_5 fraction from an olefinic gasoline stream, the C_5 fraction containing both pentenes and isopentenes, selectively disproportionating the C_5 stream, with or without the presence of added ethylene, to convert more of the normal pentenes than the isopentenes, alkylating the resulting butenes and lighter olefins with isobutane, and combining the alkylate and remaining gasoline to provide a high octane gasoline having a reduced light olefins content. In a modification of the above described multistep process produced propylene is disproportionated in a second olefin disproportionation zone, to provide additional butenes for alkylation and ethylene for reaction with n-pentenes in the first step of the process.

3,785,957
MULTISTAGE CLEAVAGE OF OLEFINS TO PRODUCE HIGH OCTANE GASOLINE
Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 3, 1972, Ser. No. 214,649
Int. Cl. C10g *37/00*
U.S. Cl. 208—49 **10 Claims**

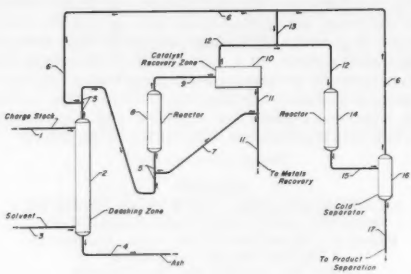


A process for increasing the octane value of olefin-containing gasoline streams comprises disproportionating the olefinic gasoline with ethylene, separating the effluent to provide a propylene stream, a butene stream, a C_5 or C_5–C_6 olefin stream, and a C_6^+ or C_7^+ gasoline stream, disproportionating the C_5 or C_5–C_6 olefin stream with ethylene to provide additional propylene and butenes, optionally disproportionating the produced propylene to provide additional ethylene and butenes, alkylating all the produced butenes with isobutane to provide a high octane alkylate and combining the high octane olkylate, and C_6^+ or C_7^+ olefin gasoline streams to provide the high octane gasoline stream.

3,785,958
DESULFURIZATION AND CONVERSION OF BLACK OILS
William K. T. Gleim, Island Lake, John G. Gatsis, Des Plaines, and Mark J. O'Hara, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 8, 1972, Ser. No. 287,308
Int. Cl. C10g *13/06, 31/14*
U.S. Cl. 208—87 **6 Claims**

Asphaltene- and ash-containing hydrocarbonaceous charge stocks are converted into lower-boiling, substantially desulfurized hydrocarbon products via a combination process involving deashing, hydrogenative conversion

of asphaltenes in a slurry-type system and desulfurization employing a fixed-bed catalytic composite. The process



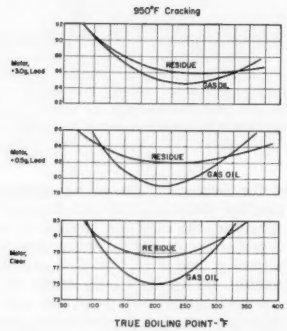
affords maximum yield of normally liquid hydrocarbon products, coupled with substantial desulfurization thereof.

3,785,959

PROCESS FOR CRACKING HYDROCARBONS CONTAINING RESIDUAL OIL

Millard C. Bryson, Conway, Joel D. McKinney, Indiana, Robert A. Titmus, Pittsburgh, and Frederick K. White, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,429
Int. Cl. C10g *11/04*; C10i *1/04*
U.S. Cl. 208—120 **19 Claims**



In fluid catalytic riser cracking of a gas oil with a zeolite catalyst the inclusion of controlled amounts of residual oil in the feed results in an improvement in octane value and/or improvement in the distribution of octane value of the gasoline product. This improvement in octane value occurs primarily in the particular boiling range fractions of the gasoline product having the lowest octane value. However, residual oil is relatively difficult to vaporize and the extent of its vaporization will depend on the equilibrium flash vaporization temperature at the bottom or inlet of the riser. The equilibrium flash vaporization temperature at the bottom of the riser is generally limited by such process necessities as avoidance of catalyst sintering or deactivation and/or avoidance of excessive catalyst to oil ratios, which can adversely affect product selectivity. Therefore, the quantity of residual oil in the feed must be controlled in relation to the equilibrium temperature in order to, on the one hand, vaporize and crack a sufficient quantity of residual oil to obtain the octane improvement effect, while, on the other hand, keeping the quantity of residual oil which remains unvaporized below a specified level. It is shown that at a fixed equilibrium flash vaporization temperature the quantity of residual oil which is vaporized cannot be increased merely by large increases in the proportion of residue in the feed.

3,785,960

REFORMING NAPHTHAS WITH A RHENIUM-GOLD CATALYST

Howard E. Merrill and Robert S. Lunt III, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Sept. 30, 1969, Ser. No. 864,277
Int. Cl. C10g *35/08*
U.S. Cl. 208—135 **14 Claims**

A process for improving the octane quality of a naphtha by contacting the said naphtha at reforming conditions with a highly active catalyst composite including a porous support and catalytically active amounts of rhenium and gold.

3,785,961

CATALYTIC REFORMING OF A RELATIVELY LEAN CHARGE STOCK IN A TWO-STEP PROCESS

Michael W. Schrepfer, Buffalo Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 860,826, Sept. 24, 1969, now Patent No. 3,617,522. This application Sept. 14, 1971, Ser. No. 180,471
The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **17 Claims**

A relatively lean hydrocarbon charge stock boiling in the gasoline range is catalytically reformed by contacting the charge stock, hydrogen and a halogen or a halogen-containing compound, in an essentially water-free reforming zone, with a highly selective reforming catalyst containing a platinum group component and a rhenium component at reforming conditions selected to produce a high octane C_5+ reformate for a first period extending until the selectivity of the catalyst decreases to an unacceptable value, and, thereafter by continuously adding water or a water-producing compound to the reforming zone in an amount corresponding to about 5 to 50 wt. p.p.m. of the hydrocarbon charge stock while continuing the contacting operation. Key feature of the subject process involves a two-step operation with this platinum-rhenium catalyst wherein the first step is operated at essentially water-free conditions with halogen inclusion and wherein the second step utilizes a carefully selected amount of water to effect a substantial improvement in the operation of the process.

3,785,962

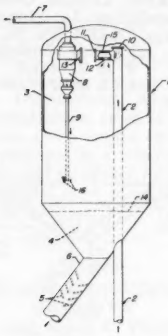
FLUIDIZED CATALYTIC CRACKING PROCESS

Algie J. Conner, Des Plaines, and Charles W. Strother and Willas L. Vermilion, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 27, 1971, Ser. No. 212,252
Int. Cl. C10g *11/18*
U.S. Cl. 208—164 **13 Claims**

A fluidized cracking process in which a riser type reaction zone empties into the dilute phase portion of a reception vessel. The process can be generally described as one in which the riser reaction zone is substantially vertical and passes into the reception zone with the outlet of the riser located within the dilute phase portion of the reception vessel. Adjacent to the riser outlet is a cyclone separation means which separates hydrocarbons and solids present in the dilute phase. The process is generally

applicable to fluidized hydrocarbon conversion processes and specifically adaptable for use in modern fluidized



catalytic cracking processes in which short catalyst-oil contact times are desired.

3,785,963

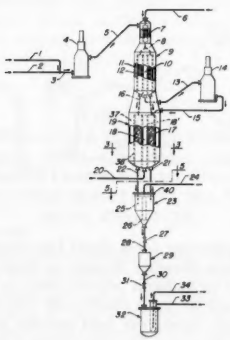
UNIFORM SOLIDS WITHDRAWAL SYSTEM

David M. Boyd, Clarendon Hills, and Arthur R. Greenwood, Niles, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 18, 1971, Ser. No. 200,123

Int. Cl. C10g *35/10*

U.S. Cl. 208—171 **2 Claims**



Uniform amounts of solids are withdrawn from a movable bed of solids by a system comprising a plurality of conduits equally spaced across the solids cross-sectional area and communicating with a collector vessel partitioned into a plurality of vertical sections of equal volume.

3,785,964

OXIDATIVE SWEETENING OF HYDROCARBON WITH NITROGEN CONTAINING COMPOUND AND WITH A CALCINED COPPER-IRON CATALYST

Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 16, 1971, Ser. No. 163,426

Int. Cl. C10g *27/04*

U.S. Cl. 208—191 **8 Claims**

The on-stream life in a sweetening process using a copper-iron catalyst is extended by incorporating in the feed a minor amount of a nitrogen containing compound having the formula:

$$R-\underset{\displaystyle R'}{\overset{}{N}}-R''$$

where R, R′ and R″ can be the same or different and are selected from hydrogen, a hydrocarbon group having from 1 to 10 carbon atoms and where optionally the hydrocarbon groups can be cyclicized to form a five or six membered heterocyclic compound. The preferred nitrogen containing compounds are ammonia and pyridine.

3,785,965

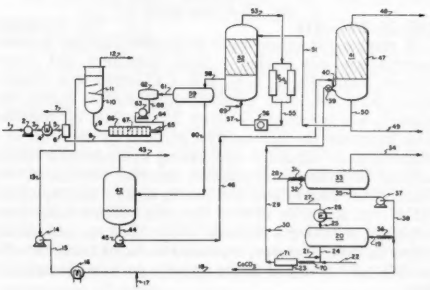
PROCESS FOR THE DESULFURIZATION OF PETROLEUM OIL FRACTIONS

Albert B. Welty, Jr., Westfield, N.J., assignor to Esso Research and Engineering Company

Filed Oct. 28, 1971, Ser. No. 193,527

Int. Cl. C10g *17/00, 19/00*

U.S. Cl. 208—208 M **15 Claims**



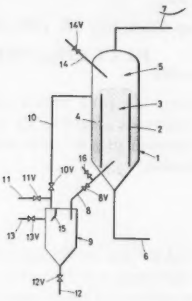
Low sulfur-content petroleum oil stocks are prepared by contacting a sulfur-containing oil stock with an alkali metal, preferably sodium, or an alkali metal alloy, preferably sodium/lead, to produce an alkali sulfide-oil dispersion. The alkali sulfide is removed from the oil by means of a two-stage washing treatment. The recovered sulfide, after additional treatment, is then electrolytically decomposed thereby reforming alkali metal for reuse in the desulfurization process.

3,785,966

METHOD FOR DISCHARGING PARTICULATE SOLID FROM HIGH PRESSURE VESSEL

Yutaka Oguchi and Junichi Kubo, Tokyo, and Shinji Goto, Yokohama, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 8, 1971, Ser. No. 132,286
Int. Cl. C10g *23/00, 25/06*
U.S. Cl. 208—213 4 Claims



An improved method is disclosed for discharging particulate solids from a high pressure vessel, which method is characterized by maintaining said particulate solids in fluidized state in admixture with fluids and thus keeping the head of the particulate solid-fluid admixture in the vessel and its pressure differential greater than the head of a conduit conducting the fluid.

3,785,967

HYDRODESULFURIZATION WITH EXPANDED OR MOVING BED OF CATALYST HAVING SPECIFIC PARTICLE DIAMETER AND SPECIFIC PORE DIAMETER

Jakob van Klinken, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed June 30, 1971, Ser. No. 158,584
Claims priority, application Netherlands, July 14, 1970, 7010428
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 9 Claims

A process for catalytically hydrodesulfurizing residual hydrocarbon oils having a total vanadium and nickel content above 30 p.p.m.w. and a C_5-asphaltene content above 0.5% wt., with catalyst replenishment during operation, which includes passing the residual oil together with hydrogen through catalyst particles in the form of a suspension or expanded bed having hydrodesulfurization activity at hydrodesulfurization reaction conditions, the catalyst particles in said bed having a pore volume above 0.3 ml./g., less than 10% of the pore volume being present in pores having a diameter above 1000 A., and having a specific pore diameter, expressed in A., of from $45 \times d^{0.6}$ to $140 \times d^{0.6}$ where d is the specific particle diameter in mm.

3,785,968

SORBENT AND PROCESS FOR HEAVY METAL REMOVAL FROM MOTOR FUEL

Darrell Duayne Whitehurst, Titusville, N.J., assignor to Mobil Oil Corporation

Filed July 12, 1972, Ser. No. 270,913
Int. Cl. C10g *17/00, 17/02*
U.S. Cl. 208—251 4 Claims

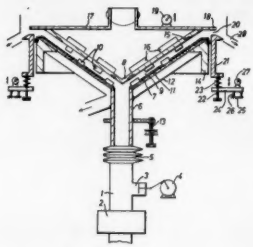
A cross-linked polystyrene resin modified by the presence therein of chemically bound sulfur provides a highly selective sorbent for removal of heavy metal contaminants from liquids containing the same.

3,785,969

METHOD OF AND APPARATUS FOR THE CONTINUOUS CONCENTRATION OF A DISPERSION CONTAINING SUSPENDED SOLID MATERIAL

Hans-Heinz Mölls, Leverkusen, Reinhold Hörnle, Cologne, Manfred Bücheler, Leverkusen, and Hans Raab and Joachim Adrio, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 22, 1971, Ser. No. 136,460
Claims priority, application Germany, May 8, 1970, P 20 22 471.9
Int. Cl. B01d *17/10*
U.S. Cl. 210—19 21 Claims



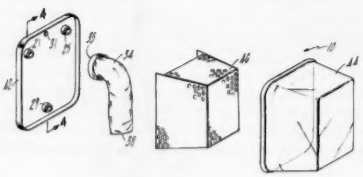
Suspended solid dispersions are guided under a pressure of 0.2 to 20 atm. above atmospheric through a gap which is a perforation, the solid dispersion, as viewed in direction perpendicular to said shells, being subjected to a drop in velocity. The supply takes place centrally and the filter cake is removed peripherally.

3,785,970

WATER SEPARATOR

David H. Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Hartford, Conn.

Filed Dec. 27, 1971, Ser. No. 212,356
Int. Cl. B01d *13/00, 33/00*
U.S. Cl. 210—23 14 Claims



A water separator for a diesel fuel supply system provides a plenum chamber housing a water separator barrier made of ribbed-knit porous cloth in the form of a cylindrical sock having a closed end. The open end of the sock is sealed around the inlet passage of the separator so that flow maintains the sock inflated for flow through the entire porous surface area of the sock. The pores of the sock are smaller, when relaxed, than the water droplets to be separated and the sock is made of nylon which is not wettable by water. The pores of the sock are expandable as required to accommodate varying flow rates with a minimum change in pressure differential across the sock and to permit the passage of large wax particles under low temperature operating conditions to prevent clogging.

3,785,971

WASTE TREATMENT MATERIAL

James L. Halley, Atlanta, Ga., assignor to Tesco Chemicals, Inc., Atlanta, Ga.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,044
Int. Cl. C02b *3/06*
U.S. Cl. 210—64 3 Claims

A waste treatment material for use in preserving refuse and waste material within a container such as a holding tank on board a ship or other type of pleasure craft which is used at locations remote from sewage receiving or treating facilities. The treatment material comprises a mixture of paraformaldehyde, an alkali material, a masking agent, a colorant, and a wetting agent. The treatment material may be packaged in a water-soluble packaging material or conventional packets of foil or plastic in convenient dosage quantities to be added at regular intervals to a waste material container.

3,785,972

CONTAINING AND REMOVING OIL SPILLS ON WATER

Henry E. Alquist and Armin C. Pitchford, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,739
Int. Cl. B01d *15/00;* E02b *15/04*
U.S. Cl. 210—40 5 Claims

A method is provided for containing oil on the surface of water and removing the oil from the water surface by increasing the liquification temperature of the oil to 50–80° F. above the temperature of the water on which it is floating by incorporating a wax into the oil to form a crust-like fused mass which will act as a boundary against extension of the oil mass and which can be easily skimmed from the water surface.

3,785,973

TEXTILE FINISH

William F. Bernholz, Wayne, Roop C. Nahta, Parsippany, and John P. Redston, Montclair, N.J., assignors to PVO International Inc., San Francisco, Calif.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,400
Int. Cl. D06m *13/40*
U.S. Cl. 252—8.8 8 Claims

Textile lubricating compositions for polyester, nylon and other fibers which contain a fatty-triglyceride, an alkylene oxide adduct of a diglyceride and an alkanolamide which may be alkoxylated.

3,785,974

LOW-TEMPERATURE LUBRICATING GREASES

William P. Scott, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 17, 1972, Ser. No. 254,021
Int. Cl. C10m *7/20*
U.S. Cl. 252—28 13 Claims

Grease compositions comprising (a) a lubricating oil composition which comprises a blend of synthetic alkaryl hydrocarbon lubricant and a synergistic amount of a mineral lubricating oil and (b) a grease-forming amount of a conventional grease-forming agent, such as modified bentonite. The greases have good to excellent viscosity properties at temperatures as low as −40 to −62° F., thus rendering them useful at these temperatures. Use of a blend of synthetic alkaryl hydrocarbon lubricant and a mineral lubricating oil, as compared to use of a synthetic alkaryl hydrocarbon lubricant alone, results in a grease composition having improved low temperature viscosity properties, which is also lower cost.

3,785,975

VAPOR SPACE INHIBITED TURBINE OIL

Earl L. Humphrey, Verona, and Willard B. Morse, New Kensington, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 18, 1971, Ser. No. 154,684
Int. Cl. C10m *1/48, 1/46*
U.S. Cl. 252—32.5 10 Claims

A vapor space inhibited turbine oil comprises (1) a major amount of a mineral lubricating oil and (2) a small amount of each of

(a) an alkyl phenol, e.g., 2,6-di-tertiary-butyl-4-methylphenol;
(b) an amine salt of a diester of o-phosphoric acid, e.g., cocoamine di-oxo-octyl orthophosphate;
(c) an alkenyl-substituted succinic acid anhydride, e.g., dodecenyl succinic anhydride;
(d) an acid ester of (1) a dimeric acid derived from an unsaturated fatty acid and (2) a partial ester of a fatty acid and an alkitol anhydride, e.g., dimerized linoleic acid-sorbitan monooleate acid ester;
(e) caprylic acid; and
(f) morpholine.

A sulfurized monoester such as sulfurized sperm oil may also be employed.

3,785,976

PROCESS FOR PRODUCING ANIONIC METAL-CONTAINING SULFONATES

Mack W. Hunt, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 7, 1971, Ser. No. 148,267
Int. Cl. C10m *1/40*
U.S. Cl. 252—33 9 Claims

A process for producing anionic metal-containing sulfonates is disclosed wherein an anionic metal-containing acid is reacted with an oil-soluble sulfonic acid and an amino-alcohol in the presence of a nonvolatile carrier and water.

3,785,977

LUBRICATING COMPOSITIONS

Peter Flowerday, Abingdon, and Robert Robson, East Hendred, England, assignors to Esso Research and Engineering Company

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,263
Int. Cl. C10l *1/22;* C10m *1/30, 1/32*
U.S. Cl. 252—33.6 7 Claims

This invention relates to an additive which when added to not only a synthetic ester lubricant but also a mineral, animal or vegetable lubricating oil confers load carrying properties, and which is non-corrosive, does not have deleterious effects on silicone rubbers, and is hydrolytically stable. Such a lubricant composition comprises a major proportion by weight of a lubricating oil, a minor proportion by weight of an amine salt of a halogen substituted carboxylic acid wherein there is at least one halogen atom in the alpha position, and a minor proportion by weight of an antioxidant. Preferably such lubricant compositions also contain a minor proportion by weight of a corrosion inhibitor.

3,785,978

AGENT FOR PREVENTING SEIZING-UP IN ZIP-FASTENERS

Horst Uhlich, 3 Pritzwalkerstr, 1000 Berlin, Germany

No Drawing. Filed May 10, 1971, Ser. No. 141,989
Int. Cl. C10m *1/32*
U.S. Cl. 252—50 6 Claims

An agent for preventing seizing-up in plastic zip-fasteners comprising a homogenized mixture of a chlorinated hydrocarbon and a dry-impregnating agent.

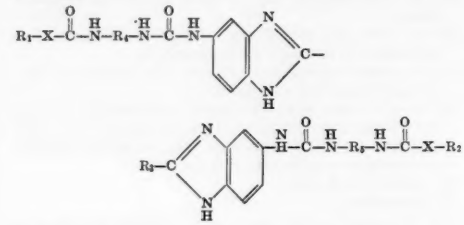
3,785,979

DIBENZIMIDAZOLE GREASE THICKENING AGENTS

August H. Birke, Godfrey, Ill., assignor to Shell Oil Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 169,459, Aug. 5, 1971. This application Oct. 11, 1972, Ser. No. 296,733
Int. Cl. C10m 5/20
U.S. Cl. 252—51.5 A 10 Claims

Dibenzimidazole compounds corresponding to the formula:



wherein R_1 and R_2 are aliphatic hydrocarbyl radicals, R_3 is a hydrocarbylene radical, R_4 and R_5 are aromatic hydrocarbylene radicals and X is —O— or

are highly efficacious grease thickening agents.

3,785,980

REACTION PRODUCT OF AN AMINE AND A HYDROPEROXIDIZED ETHYLENE/PROPYLENE COPOLYMER

Donovan R. Wilgus, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 1, 1971, Ser. No. 150,858
Int. Cl. C10m 1/20, 1/32
U.S. Cl. 252—51.5 A 15 Claims

A novel polymeric lubricating oil additive is disclosed which is the reaction product of a primary or secondary amine and a hydroperoxidized atactic ethylene/propylene copolymer.

3,785,981

RUST INHIBITING LUBRICATION OIL ADDITIVES

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 29, 1971, Ser. No. 184,740
Int. Cl. C10m 1/32
U.S. Cl. 252—51.5 A 6 Claims

The reaction product of hydrocarbyl-substituted succinic acid with 5- and 6-membered ring N-heterocycle compounds is found to be an effective rust inhibitor. The hydrocarbyl radical contains less than 30 carbon atoms. The N-heterocycles are exemplified by pyrrolidine, 2-aminothiazole, piperidine, 2-aminopyridine and 2-amino-4-methyl pyridine.

3,785,982

LUBRICANTS CONTAINING SUBSTITUTED 2-OXAZOLIDONES AS OXIDATION INHIBITORS

Abraham O. M. Okorodudu, West Deptford, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 75,657, Sept. 25, 1970. This application Sept. 27, 1972, Ser. No. 292,587
Int. Cl. C10m 1/20, 1/32
U.S. Cl. 252—51.5 A 13 Claims

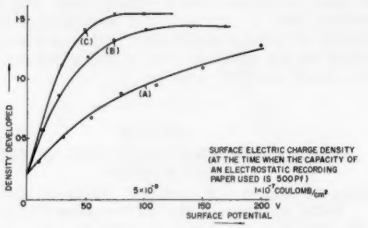
Substituted 2-oxazolidones, exemplified by 5-phenyl-5-methyl-2-oxazolidone, are valuable oxidation inhibitors when added to organic materials such as lubricating oils and greases.

3,785,983

METHOD OF PRODUCING A LIQUID DEVELOPER FOR USE IN THE ELECTRONIC PHOTOGRAPHY

Masayoshi Inoue, Koji Nagai, and Shigeo Kitaguchi, Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Dec. 1, 1971, Ser. No. 203,543
Claims priority, application Japan, Dec. 2, 1970, 45/105,938
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 7 Claims



A method of producing a liquid developer for use in the electronic photography, which method comprises saponifying and unsaturated fatty acids such as an oleic acid, a linolic acid, a linolenic acid or the like so as to make a soap, dispersing a pigment such as a carbon black or the like in an aqueous solution of said soap, substituting the alkaline metallic ions of said soap on the pigment particle surface with metallic ions having a valance of 2 or more to have them precipitated, treating this precipitate by washing and drying it after taking it out therefrom so as to produce dry powder of said pigment, and dispersing said pigment powder in an aliphatic petroleum hydrocarbon.

3,785,984

COMPOSITIONS FOR THE PREPARATION OF COLD-BLEACHING LIQUORS, PARTICULARLY ACTIVE WASHING LIQUORS

Markus Berg, Dusseldorf-Holthausen, Matthias Mallmann, Dusseldorf-Oberkassel, and Jurgen Hoffmeister, Dusseldorf-Benrath, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,212
Claims priority, application Germany, Sept. 28, 1970, P 20 47 573.4; July 1, 1971, P 21 32 703.8, P 21 32 704.8
Int. Cl. C11d 7/18, 7/56
U.S. Cl. 252—99 15 Claims

Compositions useful in the aqueous cold-bleaching of textiles comprising (1) from 0.5% to 95% by weight of an activator for active oxygen selected from the group consisting of N-acyl and O-acyl compounds having 2 to 9 carbon atoms in the acyl, said activator having an activating action of at least 3 in the Per-Acid Formation Test, (2) at least one compound selected from the group consisting of (a) an alkali metal sesquisilicate of the ratio $Me_2O:SiO_2$ of 1 to less than 2:1 in an amount that from 0.25 to 3 alkali metal atoms are present per acyl group in said activator, and (b) from 0 to 20% by weight of a water-soluble salt of a phosphoric acid ester selected from the group consisting of partial esters of fatty alcohols having from 10 to 22 carbon atoms and their ethoxylates and propoxylates having from 1 to 10 alkoxy units, with ortho phosphoric acid, pyrophosphoric acid and polyphosphoric acid, and (3) from 0 to 97% by weight of other customary ingredients of bleaching agents or washing agents having a bleaching effect.

3,785,985

COSMETIC AND TEXTILE-TREATING COMPOSITIONS

Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,204

Int. Cl. C11d *3/28, 3/48*

U.S. Cl. 252—106 **2 Claims**

A method for solubilizing heavy metal salts of 1-hydroxy-2(1H) pyridinethione which comprises the step of forming a solution containing the pyridinethione salt, an aliphatic polyamine and a solvent. Particularly preferred are compositions containing in addition to the above ingredients a cleaning agent.

3,785,986

DENTURE CLEANER

Frederick L. Lauster, Massillon, Ohio, assignor to La Fant Research Company, Canton, Ohio

No Drawing. Filed June 28, 1972, Ser. No. 267,071

Int. Cl. C11d *7/36*

U.S. Cl. 252—136 **2 Claims**

A denture cleaner is provided which is non-abrasive and is highly effective for quickly and easily removing stains and tartar deposits from dentures embodying plastic or porcelain teeth and other conventional materials used in dentures. The cleaner is effective for cleaning both full and removable partial dentures, as well as for polishing gold or chromium alloy clasps and removable orthodontic and other oral dental appliances. The cleaner also has high stability under conditions involving both high and low temperatures.

3,785,987

TERNARY AZEOTROPIC CLEANING SOLUTION BASED ON TETRADICHLORODIFLUOROETHANE

John Allan Schofield, Riverside, Conn., and Roger Albert Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Oct. 28, 1968, Ser. No. 771,334, now Patent No. 3,640,884. Divided and this application July 28, 1971, Ser. No. 167,039

Int. Cl. C11d *3/44*

U.S. Cl. 252—171 **2 Claims**

A ternary azeotrope of tetrachlorodifluoroethane, dichloroethane and ethanol has superior properties for solvent vapor cleaning and degreasing applications.

3,785,988

CORROSION AND SCALE INHIBITING COMPOSITION

Yutaka Yamashita and Masami Sata, Tokyo, Japan, assignors to Kokusai Kasei Kosha Co., Ltd., Tokyo, Japan

No Drawing. Filed July 2, 1971, Ser. No. 159,501

Int. Cl. C02b *5/00*

U.S. Cl. 252—181 **9 Claims**

An inhibitor for preventing formation of corrosion and scale on metals in the presence of water is formed of about 40% by weight hydrazine, about 25% maganese compound, about 15% zinc or zinc compound, about 15% silicon chlorine hydrogen compound, about 4% mineral oil, about 1% silver compound, and about 0.4% beryllium compound.

3,785,989

NOVEL DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM

Siegfried Noetzel, Mainz, and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,309

Claims priority, application Germany, Feb. 2, 1971, P 21 04 718.7

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R **3 Claims**

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and as resin a condensation resin, consisting of copolymerizates of unsaturated carboxylic acid anhydrides and other vinyl compounds which are cross-linked with bi- or polyfunctional alcohols and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the condensation resin. These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyl resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book-printing and offset-litho printing. Due to their resistance to heat, they are particularly suitable for fluorescent dyeing of plastic and enamels.

3,785,990

METHOD OF MANUFACTURING A GENERATOR WHICH PRODUCES RADIO-ISOTOPES AND HAS AN IMPROVED ELUTION EFFICIENCY, AND GENERATOR OBTAINED BY THIS METHOD

Harm Martinus Benjamins, Koos Kortenoeven, and Helena Panek-Finda, all of van Houtenlaan, Weesp, Netherlands

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,502

Claims priority, application Netherlands, Mar. 2, 1971, 7102716

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 R **4 Claims**

It has been found that the elution efficiency of generators which produce radioactive isotopes and contain Al_2O_3 as the adsorbent may be greatly improved. The improvement is obtained by providing the adsorbent of the generator with an oxidant before first use of the generator. The oxidant must have a strong affinity for the substrate. Suitable oxidants are chromates and dichromates.

3,785,991

METHOD OF PREPARING PHOSPHORS FOR INFRARED-TO-VISIBLE CONVERSION

Akio Toshinai, Chigasaki, and Takashi Hase, Kamakura, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka-shi, Japan

Filed Dec. 20, 1971, Ser. No. 209,750

Claims priority, application Japan, Dec. 21, 1970, 45/114,907; June 8, 1971, 46/40,356

Int. Cl. C09k *1/06*

U.S. Cl. 252—301.6 R **8 Claims**

This invention relates to a phosphor for infrared-to-visible conversion comprising as a main ingredient a complex rare earth fluoride having a general composition expressed by the formulae $(Y_{1-x-y}Yb_xA_y)F_3$,

$$(La_{1-x-y}Yb_xA_y)F_3$$

or $(Lu_{1-x-y}Yb_xA_y)F_3$, respectively, wherein x is in the range of from 0.05 to 0.5, y is in the range of from 0.02 to 0.09 when yttrium fluoride is used as the host material, and from 0.001 to 0.1 when lanthanum or lutetium fluoride is used as the host material, and A is at least one member selected from Er and Ho, and zinc incorporated in the complex rare earth fluoride, and a process for the preparation of a zinc-incorporated phosphor for infrared-to-

visible conversion, which comprises adding zinc fluoride or zinc silicofluoride prior to or after formation of said complex rare earth fluoride, and subsequent heating.

3,785,992

PROCESS FOR PRODUCING UNTWINNED SINGLE CRYSTALS OF $LaAlO_3$

Homer Fay, Somers, N.Y., and Charles D. Brandle, Jr., Somerville, N.J., assignors to Union Carbide Corporation

No Drawing. Continuation of application Ser. No. 836,199, June 11, 1969, which is a continuation of application Ser. No. 558,582, June 20, 1966, both now abandoned. This application Jan. 11, 1972, Ser. No. 217,032

Int. Cl. C09k *1/68;* **B01j** *17/18;* **C01r** *7/02*

U.S. Cl. 252—301.4 R **6 Claims**

Lanthanum aluminate crystals grown as optically translucent twinned crystals are detwinned to produce optically transparent crystals suitable for use as laser hosts. The detwinning is produced by application of moderate mechanical stress to the twinned crystal along a [111] direction until the crystal exhibits optical transparency.

3,785,993

STABLE LIQUID EMULSIFIER COMPOSITIONS

Roy Kenneth Langhans, Newark, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed June 4, 1971, Ser. No. 150,195

Int. Cl. B01f *17/34*

U.S. Cl. 252—356 **10 Claims**

Temperature-stable, clear liquid emulsifier baking compositions comprising an ethoxylated fatty acid ester of a glycerol, hexitol, a hexitan, or an isohexide as a conditioner and a monoglyceride as a softener in combination with small amounts of clarifiers selected from propylene glycol, water, ethanol, and edible oils have been found more suitable for the continuous manufacture of baked goods. The liquid emulsifier compositions may be metered into the shortening or directly into the dough or sponge for batch methods of preparation or into the liquid brew or sponge in continuous processes.

3,785,994

GAS MIXTURE FOR FORMING PROTECTIVE COATINGS ON GRAPHITE

Melvin G. Bowman, 3247 Woodland, and Dwayne T. Vier, 764 43rd St., both of Los Alamos, N. Mex. 87544

No Drawing. Filed Sept. 23, 1960, Ser. No. 58,139

Int. Cl. C01b *2/00;* **C23c** *13/02*

U.S. Cl. 252—372 **5 Claims**

A gaseous mixture of hydrogen, hydrogen chloride, and a chloride of titanium, zirconium or niobium, which provides protection for graphite surfaces from hydrogen corrosion at temperatures greater than 1500° C. The composition of the mixture is such that the metal chloride and hydrogen react with graphite to form a protective metal carbide layer.

3,785,995

ANTIOZONANT-ANTIOXIDANT COMPOSITION CONTAINING SECONDARY AMINE AND HYDROUS CALCIUM SILICATE

James Kalil, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,365

Int. Cl. C08d *11/04*

U.S. Cl. 252—400 R **8 Claims**

An antiozonant-antioxidant composition which is crystalline and readily dispersible in elastomeric polymers comprising a mixture of, by weight, 94–86% secondary amine, said amine containing 30–65% diaryl-p-phenylenediamine and 70–35% N-phenyl-2-naphthylamine, and 6–14% hydrous calcium silicate and process for making the same.

3,785,996

FOUR-STEP PROCEDURE FOR REGENERATING A CATALYST CONTAINING PLATINUM, RHENIUM AND HALOGEN

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 797,272, Feb. 6, 1969, now Patent No. 3,634,292. This application Aug. 26, 1971, Ser. No. 175,342

Int. Cl. B01j *11/18, 11/80;* **C10g** *35/06*

U.S. Cl. 252—415 **17 Claims**

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a rhenium component, and halogen component with a porous carrier material and which has been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (a) burning carbon therefrom at a relatively low temperature with a substantially sulfur compound-free gas stream containing H_2O and a relatively small amount of O_2, (b) treating the resulting partially regenerated catalyst at a relatively higher temperature with a substantially sulfur compound-free gas stream containing a halogen or a halogen-containing compound, H_2O and a relatively higher amount of O_2, (c) purging O_2 and H_2O from contact with the resulting catalyst, and (d) subjecting the resulting catalyst to contact with a dry and sulfur compound-free hydrogen stream. Key features of the disclosed method are: (1) presence of water in the gas streams used in all steps except the reduction step; (2) careful control of the temperature used during each step; (3) adjustment of the halogen content of the catalyst immediately after the carbon-burning step and prior to the reduction step; (4) careful control over the composition of the gas streams used in the various steps thereof; and (5) exclusion of sulfur compounds from all gas streams utilized.

3,785,997

POLYAMINE AND HYDROCARBON SULFONIC ACID ACCELERATOR COMBINATION FOR EPOXY CURING

Norman Bell Godfrey, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 80,510, Oct. 13, 1970, now Patent No. 3,666,721. This application Jan. 24, 1972, Ser. No. 220,400

Int. Cl. C08g *30/14*

U.S. Cl. 252—426 **10 Claims**

An accelerator combination of a polyamine such as a polyalkylenepolyamine or an N-(aminoalkyl)piperazine and a hydrocarbon sulfonic acid is synergistic for accelerating the cure of a polyglycidyl ether of a polyhydric phenol cured with a polyoxypropylenepolyamine. The epoxy resin product is useful in castings, coatings, adhesives, laminates, filament-reinforced compositions, seamless flooring, terrazzo flooring, crushed-stone aggregates and in grouting, caulking and sealing compositions.

3,785,998

METHOD OF CATALYST MANUFACTURE BY IMPREGNATING HONEYCOMB-TYPE SUPPORT

James Hoekstra, Evergreen Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 30, 1971, Ser. No. 158,588

Int. Cl. B01j *11/46*

U.S. Cl. 252—477 R **6 Claims**

A relatively low surface area honeycomb-type ceramic support is impregnated with a platinum group metal component dissolved in an alumina sol, the sol further containing a soluble plasticizer. The support is thereafter calcined to form a platinum group metal component dispersed on a uniformly thin, high surface area alumina film deposited on said support.

3,785,999

PROCESS OF MAKING GRAPHITE-METAL CHLORIDE INTERCALATION COMPOUNDS AND PRODUCT OBTAINED THEREBY

Helmut Derleth, Sarstedt, and Hermann Fischer, Evern, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,765

Claims priority, application Germany, Aug. 19, 1970, P 20 41 167.0

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **6 Claims**

Graphite-metal chloride intercalation compounds are made by contacting a mixture of graphite and at least one water of hydration containing metal chloride with a stream of chlorine at a temperature between 200° C. and the decomposition temperature of the intercalation compound and at a pressure between atmospheric and 5 atm.

3,786,000

CATALYST FOR THE PRODUCTION OF ACROLEIN AND ACRYLIC ACID

Isao Ono, Tetsuo Iiguni, and Mitsumasa Akashi, Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,906

Int. Cl. B01j *11/06*

U.S. Cl. 252—464 **7 Claims**

A process for producing acrolein which comprises catalytic oxidizing propylene in the vapor phase with oxygen and steam in the presence of novel catalyst, having superior nature in activity, and composed of oxides of Mo, Co, Fe, Bi, and Sn with or without one or more of Al, Ni, W, Cr, In, and Nb, is disclosed.

3,786,001

REFORMING CATALYST AND PREPARATION

Edward B. Cornelius, Swarthmore, and George B. De La Mater, Media, Pa., David W. Koester, Wilmington, Del., and James E. McEvoy, Springfield, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed June 21, 1971, Ser. No. 155,224

Int. Cl. B01j *11/12*

U.S. Cl. 252—464 **6 Claims**

Hydrated alumina gel, having a small amount of Group V–B metal oxide uniformly distributed therein, is calcined, leached with acetic acid, recalcined, humidified, and impregnated with a Group VIII noble-metal-containing composition. Reductive treatment of such material to provide supported metallic Group VIII noble metal results in highly active, stable, hard reforming catalyst having very low bulk density.

3,786,002

ANTISTATIC COATING COMPOSITIONS

August Jean Van Paesschen, Antwerp, Joseph Antoine Herbots, Edegem, and Daniel Maurice Timmerman, Mortsel, Belgium, assignors to Agfa N.V., Mortsel, Belgium

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,926

Claims priority, application Great Britain, Oct. 29, 1969, 53,026/69

Int. Cl. G03c *1/82*

U.S. Cl. 252—500 **6 Claims**

An antistatic coating for a polyester film support is provided comprising a homogeneous mixture of (A) a chlorine-containing polymer consisting of at least 70% by weight of at least one monomer taken from vinylchloride and vinylidene chloride, and (B) a polymeric material having electroconductive properties, the ratio of chlorine-containing polymer to electroconductive polymeric material varying between 2:1 and 1:2 parts by weight.

3,786,003

LIQUID DETERGENT COMPOSITIONS

Leon Hunter, Walnut Creek, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,850

Int. Cl. C11d *1/14*

U.S. Cl. 252—551 **8 Claims**

Pourable, liquid alcohol ethoxysulfate compositions are prepared from solid alcohol ethoxysulfates by combining with selected amounts of water and a sodium or potassium salt.

3,786,004

THERMOSETTING RESINOUS COMPOSITION

Akio Furuya, Yokohama, Makoto Hachiboshi, Ohtsu, Toshio Adachi, Osaka, and Masakatsu Uchida, Kamakura, Japan, assignors to Dainippon Toryo Co., Ltd. Leben Utility Co., Ltd., and Toyobo Co., Ltd., both of Osaka-shi, Japan

Filed Oct. 27, 1971, Ser. No. 192,893

Claims priority, application Japan, Dec. 29, 1970, 46/121,221; Dec. 30, 1970, 46/122,802

Int. Cl. C08g *58/10;* **C08j** *1/20, 1/22*

U.S. Cl. 260—2.5 N **26 Claims**

A thermosetting resinous composition comprising a vinyl chloride resin, an unsaturated polyester resin, a polymerization initiator, a reactive plasticizer and a member selected from the group consisting of the compounds of alkali metals of Group I in the Periodic Table, the compounds of elements of Group II in the Periodic Table and the compounds of lead, optionally together with a non-reactive plasticizer and/or a vinyl monomer, and a thermosetting resinous composition obtained by incorporating a bubbling material into the above composition.

3,786,005

CATALYZING URETHANE FOAM POLYMERIZATION WITH 4-(2 - DIMETHYLAMINOMETHYL) MORPHOLINE

Ibrahim S. Bechara, Boothwyn, and Rocco L. Mascioli, Media, Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

No Drawing. Continuation-in-part of application Ser. No. 109,641, Jan. 25, 1971. This application Aug. 22, 1972, Ser. No. 282,820

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AC **4 Claims**

A precursor mixture comprising organic materials having a plurality of isocyanato groups per molecule and organic materials having a plurality of hydroxy groups per molecule, said precursor containing modifying agents such as surfactants, fillers, foaming agents, dyes and/or similar minor components, is transformed into a useful polyurethane foam structure by reliance upon 4-(2-dimethylaminoethyl)morpholine as the principal amine catalyst for the polymerization.

3,786,006

MANUFACTURING METHOD FOR POLYAMIDE FOAM

Toru Okuyama and Susumu Muta, Yokohama, Shigetake Sato, Kamakura, and Shohei Tokiura and Akira Miyasu, Hirakata, Osaka, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, and Ube Industries Limited, Ube City, Yamaguchi Prefecture, Japan

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,446

Claims priority, application Japan, Oct. 7, 1971, 46/78,330

Int. Cl. C08g *20/12, 53/10*

U.S. Cl. 260—2.5 N **7 Claims**

Method for manufacturing polyamide by polymerizing a lactam in the presence of a basic catalyst, a foaming agent, an N-chlorocarbonyl-2-chloro-2,3-dehydropolymethyleneimine compound in the amount ranging from $\frac{1}{10}$ to $\frac{1}{1,000}$ mol per 1 mol of the lactam to be used and an aliphatic isocyanate compound in the amount ranging

from 1/10 to 1/1000 mol per 1 mol of the lactam to be used. The temperature for carrying out the polymerization and the foaming must be above the melting point of the lactam and below the melting point of the resulting polymer. The advantage of the invention lies in that the reaction can be carried out simply in the ambient atmosphere and without necessity of removal of water during the reaction. The product foam mass has evenly distributed fine cell and is of satisfactorily low density.

3,786,007
BORAX BORATED POLYMERIC FAT ACID POLYAMIDES

Paul D. Whyzmuzis, St. Paul, and Clarence W. Wilkus, New Brighton, Minn., assignors to General Mills Chemicals, Inc.

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,969
Int. Cl. C08g *20/00*
U.S. Cl. 260—18 N **10 Claims**

Borated polyamides are disclosed which are the reaction of borax with a polymeric fat acid polyamide resin. These borated products are useful as binders for inks, particularly water based printing inks, or other applications where a water-borne film forming vehicle is desired. The polyamide resins employed in the boration are relatively high acid number thermoplastic resins.

3,786,008
PRINTER'S INK

Eduard Karlovich Piiroya, ulitsa Syle 21, kv. 9, and Mall Felix-Ottomarovna Adrat, ulitsa Kunderi 10, kv. 6, both of Tallin, U.S.S.R.

No Drawing. Continuation-in-part of application Ser. No. 132,576, Apr. 4, 1971, which is a continuation of application Ser. No. 749,568, Aug. 2, 1968, both now abandoned. This application Aug. 18, 1971, Ser. No. 172,871
Int. Cl. C09d *3/66, 11/10*
U.S. Cl. 260—23 H **9 Claims**

A printing ink, comprising polyisobutylene with a molecular weight of 20,000–200,000; air-drying varnishes comprising polymerized linseed oil or a polyester of pentaerythritol and phthalic acid modified with drying vegetable oil and dissolved in this oil, or a polyester of glycerine and phthalic acid modified with drying vegetable oil and dissolved in this oil, or mixtures of the above-mentioned varnishes; metal salts of high carboxylic acids having more than 6 carbon atoms; pigments and an organic solvent.

3,786,009
STABILIZED POLYBUTADIENE RESIN

Delmar F. Lohr, Jr. and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,063
Int. Cl. C08f *19/14*
U.S. Cl. 260—23.7 M **18 Claims**

The incorporation of a combination of a metal di(hydrocarbyl) phosphoro (di- or tetra-) thioate and a metal soap into a polybutadiene resin greatly enhances the resistance thereof to thermoxidative deterioration.

3,786,010
POLYMER DISPERSION AND PROCESS FOR PREPARATION OF THE SAME

Hideyoshi Tsugukuni, Sakai, and Mitsuhiro Matsuda, Tondabayashi, Japan, assignors to Dainippon Toryo Co., Ltd., Osaka-shi, Japan

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,454
Claims priority, application Japan, Sept. 8, 1970, 45/78,690; Jan. 23, 1971, 46/2,171; Feb. 15, 1971, 46/6,600
Int. Cl. C08f *47/18*
U.S. Cl. 260—21 **14 Claims**

This invention relates to a polymer dispersion useful especially as a coating composition, which comprises an organic liquid as a dispersion medium and an oil-modified alkyd resin solvated in the organic liquid, the oil-modified alkyd resin being block- or graft-polymerized with acrylonitrile and other copolymerizable monomers, and to a process for the preparation of such polymer dispersion.

3,786,011
POLYVINYL CHLORIDE RESIN COMPOSITION CLOSELY SIMULATING A GRASS PLAYING SURFACE IN ITS BOUNCE CHARACTERISTICS

David Watkin Price and Ronald Sidebottom, Cheltenham, Murray George Briscoe, Eckington, and Ronald Charles Moore, North Weald, England, assignors to Coal Industry (Patents) Limited, London, England

No Drawing. Filed June 1, 1971, Ser. No. 149,002
Int. Cl. C08c *9/14*; C08f *29/24*
U.S. Cl. 260—22 CB **18 Claims**

A synthetic pitch or field for cricket, tennis, and like ball games is provided, which, in contrast to previous proposed pitches, closely simulates grass, particularly in its bounce characteristics, especially for spinning balls. The synthetic pitch or field contains 25% to 75% of plasticized polyvinyl chloride material, 5% to 20% of a finely divided fibrous material, 0% to 20% of a natural or synthetic rubber, preferably a nitrile rubber, and 10% to 60% of a finely divided, preferably low density filler, for example chalk and clay, and may also contain a green pigment.

3,786,012
AQUEOUS EMULSION POLISH COMPOSITIONS

Donald L. Marion, Homewood, Lawrence R. Hanson, Park Forest, and Robert C. Strand, Homewood, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 84,915, Oct. 28, 1970, which is a continuation of application Ser. No. 728,811, May 13, 1968, both now abandoned. This application Mar. 31, 1972, Ser. No. 240,271
Int. Cl. C08f *45/28, 45/52*
U.S. Cl. 260—28.5 **10 Claims**

Aqueous emulsion compositions useful, for example, as floor polishes and containing polymeric film-former, a carboxyl group-containing leveling resin, a hydrocarbon wax and a carboxyl group-reactive complexing metal are improved in terms of their ability to provide films exhibiting excellent detergent resistance and ammonia-removability by employing as the leveling resin an about 50 to 100 percent half-esterified copolymer of styrene and maleic anhydride, the esterifying alcohol being an aliphatic, monohydric alcohol of 1 to about 10 carbon atoms, e.g., n-propanol, the molar ratio of styrene to maleic anhydride in said copolymer being about 1.5 to 2.5:1 and said copolymer having a molecular weight of about 600 to 6000 and an acid number of about 175 to 275. Suitable carboxyl-reactive complexing metals include, for example, zinc and zirconium and these may advantageously be supplied to the composition in the form of complexes of said metals with ammonium and carbonate ions.

3,786,013
TRANSFER MEDIA AND TRANSFERABLE COATING COMPOSITIONS

Gary J. Peters, Dayton, Stanley R. Hermann, Xenia, Howard R. Jaynes, New Carlisle, and Larry F. Milbrandt, Cincinnati, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,617
Int. Cl. C08f *29/46, 45/24, 45/52*
U.S. Cl. 260—28.5 R **6 Claims**

Transferable coating compositions consisting essentially of two acrylate polymers, two waxes and at least one sensible material are disclosed. These coatings can be

placed on a transfer base such as polyethylene terephthalate and transferred to paper tags and labels or plastic cards. These coatings have easily controlled transfer properties, excellent print quality and durability, and excellent shelf stability.

3,786,014

ELECTROCOATABLE PAINT CONTAINING NON-FERROMAGNETIC CHROMIUM OXIDE

Danvers Allin Swales, Harrogate, and John William Carson, Leeds, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,602
Claims priority, application Great Britain, Aug. 22, 1969, 42,026/69
Int. Cl. C09c *1/34*; C23b *13/00*
U.S. Cl. 260—29.2 R **9 Claims**

A paint composition suitable for electrodeposition contains a non-ferromagnetic oxide of chromium intermediate between CrO_3 and Cr_2O_3. Intermediate oxides of chromium may be painted onto corrosible metals to inhibit corrosion.

3,786,015

METHOD FOR PREPARING FAST CURING SILANOL-CONTAINING ORGANOPOLYSILOXANE RESINS AND USE OF SUCH RESINS

Duane F. Merrill, Balston Spa, and Philip J. Lavan, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,047
Int. Cl. C08g *51/34*
U.S. Cl. 260—32.8 SB **8 Claims**

Method for preparing fast curing silanol-containing organopolysiloxane resins is provided. Organohalosilanes are hydrolyzed in a water immiscible organic solvent, utilizing acetone as a cosolvent. Selected portions of certain carboxylic acid salts are added in increments. The subject resins are fast curing and are especially useful in coating formulations.

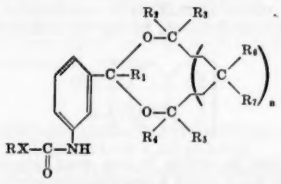
3,786,016

CARBANILATE DIOXOLANES AND DIOXANES AND THEIR UTILITY AS HERBICIDES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,485
Int. Cl. C07d *13/04, 15/04*
U.S. Cl. 260—340.7 **43 Claims**

Substituted carbanilate dioxolanes and dioxane compounds having the formula



in which R is selected from the group consisting of lower alkyl, and benzyl; X is selected from the group consisting of oxygen and sulfur; R_1, R_2, R_3, R_4, R_5 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of alkyl, haloalkyl, hydrogen, hydroxymethyl, lower alkoxy carbonyloxymethyl, S-lower alkylthio carbonyloxymethyl, N-lower alkyl carbamoyloxymethyl and N-phenylcarbamoyloxymethyl; and *n* is 0 or 1. These compounds are useful as herbicides.

3,786,017

YELLOW PIGMENT COMPOSITIONS

Guido R. Genta, Snyder, N.Y., assignor to American Aniline Products, Inc.

No Drawing. Continuation-in-part of application Ser. No. 826,272, May 20, 1969, now Patent No. 3,635,957. This application Jan. 14, 1972, Ser. No. 217,928
Int. Cl. C08f *45/14*; C08g *51/14*
U.S. Cl. 260—38 **6 Claims**

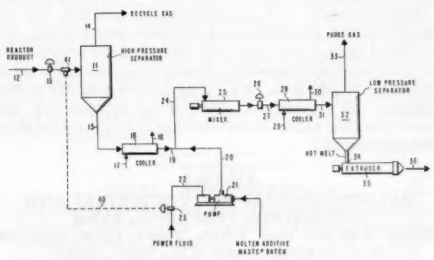
Water-insoluble disperse yellow pigments, particularly suitable as colorants for plastics, are provided. The dyes are made from a benzaldehyde intermediate having as part of its structure a 2-mercaptobenzothiazole or a thiazolinethiol by reacting the benzaldehyde intermediate with an active methylene group compound which contains at least one nitrile as an activating group.

3,786,018

INTRODUCING ADDITIVES IN POLYOLEFINS

Murray Nadler, Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Oct. 7, 1971, Ser. No. 187,490
Int. Cl. B01f *3/10*; C08f *45/44, 45/58*
U.S. Cl. 260—32.6 PQ **8 Claims**



Molten additives are introduced into molten polyolefin, such as polyethylene, under pressure and a homogenous mixture is obtained by intensely mixing the polyolefin and additive while reducing the pressure of the mixture.

3,786,019

FIRE PROTECTING PAINTS

Zbigniew Brzozowski, Warsaw, Jadwiga Kusmierek, Gdansk, and Stanislaw Porejko, Warsaw, Poland, assignors to Politechnika Warszawska, Warsaw, Poland

No Drawing. Continuation-in-part of abandoned application Ser. No. 47,604, June 18, 1970. This application Mar. 15, 1972, Ser. No. 234,998
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **5 Claims**

Fire resistant paints are prepared by mixing an epoxy resin obtained from epichlorohydrin and chlorobisphenol which contains chlorine in the side aliphatic radical, attached to the carbon atom joining the two aryl rings by a double bond, with an antimony or phosphorous compound and with known additives such as pigments, solvents, plasticizers, fillers and the like. The paints are cured conventionally, i.e. with an aliphatic or aromatic amine, an adduct of such amine with epoxy resins, adducts of such amines with alkyl ethers, polyaminoamides, or solutions of the above mentioned materials containing amino groups.

3,786,020

CAULKING COMPOSITION COMPRISING POLYMER HAVING ADDITION POLYMERIZED BACKBONE HAVING CARBOXYL GROUPS ESTERIFIED WITH DRYING OIL FATTY ACID GLYCIDYL ESTER

William D. Emmons, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,429
Int. Cl. C08g 51/02, 51/04
U.S. Cl. 260—41 A 4 Claims

The caulking or sealing composition of the invention has as its binder an acrylic backbone containing pendant unsaturated groups, preferably derived from drying oils or equivalent air curable unsaturated pendant alkyl radicals, and attached to the acrylic backbone through ester linkages. The modified acrylic product has the flexibility and durability characteristic of acrylics, and the advantage that the composition will cure similarly to drying oils, using driers such as cobalt naphthenate and zinc naphthenate.

3,786,021

POLYMERS OF 1-OLEFINS PROTECTED AGAINST ULTRAVIOLET LIGHT

Ronald D. Mathis, Taylors, and James S. Dix, Greenville, S.C., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 10, 1972, Ser. No. 216,742
Int. Cl. C08f 45/58
U.S. Cl. 260—45.75 N 5 Claims

Homopolymers and copolymers of 1-olefins, e.g. of propylene and propylene and ethylene, respectively, are protected against the deleterious effects of ultraviolet light by incorporating therewith a synergistic combination of a hydroxybenzophenone, e.g. 2-hydroxy-4-n-octoxybenzophenone and an aromatic oxime metal complex, e.g. the metal ketoxime nickel bis(syn-methyl-2-hydroxy-4-methylphenylketoxime).

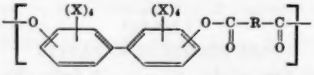
3,786,022

HALOGEN CONTAINING POLYESTERS AND METHOD FOR PREPARING SAME

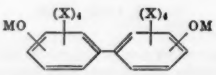
Naoaki Hata and Yuzo Takase, Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,320
Claims priority, application Japan, Mar. 30, 1971, 46/18,950
Int. Cl. C08g 17/08
U.S. Cl. 260—47 C 8 Claims

A linear, high molecular weight polyester consisting essentially of recurring structural units having the following formula:



wherein X is a halogen atom; R represents a member selected from the group consisting of divalent aliphatic radicals and divalent aromatic radicals is prepared by reacting (1) one or more compounds represented by the following general formula:



wherein X is a halogen atom; M represents a member selected from the group consisting of hydrogen atom, alkali metal atom and acyl group having 2 to 4 carbon atoms, and (2) one or more compounds represented by the following general formula:

Z—CO—R—CO—Z

wherein Z represents a member selected from the group consisting of a halogen atom and hydroxyl group; and R has the same significance as defined above.

3,786,023

FLAME-RETARDANT COMPOSITIONS

Anderson O. Dotson, Jr., New Brunswick, and Jack Newcombe and Lionel T. Wolford, Freehold, N.J., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed July 24, 1972, Ser. No. 274,557
Int. Cl. C08f 45/56, 45/62
U.S. Cl. 260—45.75 B 9 Claims

Polypropylene is rendered flame retardant by the incorporation of N,N'-hexane-1,6-bis(5,6-dibromonorbornane-2,3-dicarboximide). If desired, the flame retardancy may be enhanced with synergists, such as certain metal compounds (e.g., antimony trioxide) and certain organic phosphites (e.g., distearyl pentaerythritol diphosphite).

3,786,024

HIGH MOLECULAR WEIGHT AROMATIC POLYAMIDES HAVING AN AFFINITY FOR BASIC DYES

Gerhard Dieter Wolf, Dormagen, Günter Blankenstein, Stommeln, and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Apr. 7, 1971, Ser. No. 132,170, now Patent No. 3,676,525. Divided and this application Jan. 21, 1972, Ser. No. 219,819
Claims priority, application Germany, Apr. 13, 1970, P 20 17 509.1
Int. Cl. C08g 20/20, 20/36
U.S. Cl. 260—47 CZ 11 Claims

A polyamide composition of matter that can be dyed with basic dyestuffs comprising a conventional high molecular weight aromatic polyamide and 3 to 30% by weight of an aromatic polyamide containing 30–100 mol percent of removing structural units with disulfone imide structures.

3,786,025

RAPID CURING RESIN COMPOSITIONS COMPRISING A PHENOL-ALDEHYDE CONDENSATION POLYMER MODIFIED WITH AN AMINONAPHTHALENE

Harlan G. Freeman, Gene F. Baxter, and George T. Tiedeman, Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of abandoned application Ser. No. 821,998, May 5, 1969. This application June 1, 1971, Ser. No. 148,907
Int. Cl. C08g 9/06
U.S. Cl. 260—51.5 45 Claims

Described herein are reaction products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. The products are made by reacting an aldehyde condensation polymer having reactive alkylol groups, such as a phenol-formaldehyde condensation polymer, with an aminonaphthalene having the formula:

where R may be amino in any open ring position or hydroxyl in the 2, 5 and 8 ring positions when the amino group is in the 1 position, to obtain an amine-modified polymer. When the resulting reaction product is blended with an appropriate curing agent, such as an aldehyde, the compositions cure very rapidly at ambient temperature. When pieces of wood or other materials are spread with the preferred adhesives employing the resin compositions of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the adhesives of this invention under adverse weathering conditions are excellent.

3,786,026

METHOD OF PREPARING HIGH MOLECULAR WEIGHT POLYOXYMETHYLENES

Jacob Ackermann, Gorla Minore, Varese, and Pierino Radici, Turate, Como, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,842
Claims priority, application Italy, Nov. 12, 1970, 31,631/70
Int. Cl. C08g *1/02*
U.S. Cl. 260—67 FP 8 Claims

Polyoxymethylenes are produced by polymerizing cyclic monomers in the presence of up to 10 mole percent of short chain polyoxymethylene ethers, the monomers used being highly purified and the ratio of polymerization to induction time being between 2 and 10 to 1.

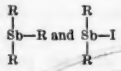
3,786,027

METHOD FOR PREPARING RANDOM COPOLYMERS OF FORMALDEHYDE AND OLEFIN OXIDE SILANE AND/OR VINYL ETHER SILYL

Robert Alton Setterquist, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 9,983, Feb. 9, 1970, now Patent No. 3,661,854, dated May 9, 1972. This application Nov. 16, 1971, Ser. No. 199,330
Int. Cl. C08g *1/14, 1/18*
U.S. Cl. 260—67 FP 11 Claims

Random copolymers of formaldehyde monomer and olefin oxide silane and/or vinyl ether silyl monomers can be prepared by reacting said monomers at a temperature of from about −20° to about 100° C. in the presence of a perfluoroalkylstibine catalyst having the formula



in which R is perfluoroalkyl of from 1–8 carbon atoms.

3,786,028

1,2,5-THIADIAZOLE POLYESTERS

Robert Neal MacDonald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 14, 1969, Ser. No. 866,401, now Patent No. 3,664,986. Divided and this application Mar. 23, 1972, Ser. No. 237,555
Int. Cl. C08g *17/06, 17/08*
U.S. Cl. 260—75 N 8 Claims

Disclosed herein are polymers containing 1,2,5-thiadiazole rings in the polymer chain and their preparations. The polymers are capable of being made into films, fibers, coatings and molded objects.

3,786,029

USE OF CERTAIN AMINOORTHOESTERS AS POLYURETHANE CATALYSTS

Ibrahim S. Bechara, 1159 Naamans Creek Road, Boothwyn, Pa. 19061, and Dewey G. Holland, Box 503-B, R.D. 1, Chadds Ford, Pa. 19317

No Drawing. Filed Aug. 1, 1972, Ser. No. 276,976
Int. Cl. C08g *22/38, 22/46*
U.S. Cl. 260—75 NC 3 Claims

Aminoorthoesters are prepared from amino alkanols and orthoesters of the formula $R—C(OR')_3$. Such aminoorthoesters have utility as activators in polyurethane formation, as curing agents for epoxy resins, and in other uses. Advantageous properties include good stability, low odor, low toxicity and good activity in its use fields.

3,786,030

CATALYST FOR TRIMERIZING POLYISOCYANATES

David E. Rice, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,413
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 NC 8 Claims

Certain dialkylaminoalkylurethanes, formed by the reaction of isocyanates with certain N,N-dialkylalkanolamines, are used as latent catalysts for the cross-linking or trimerization of polyisocyanate-terminated prepolymers.

3,786,031

POLYAMIDEURETHANES AND THEIR PREPARATION

Shitomi Katayama, Hideichi Horikawa, Masao Obuchi, and Yoshihiro Ito, Akita, Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 216,278, Jan. 7, 1972, which is a continuation-in-part of application Ser. No. 127,374, Mar. 23, 1971, both now abandoned. This application Dec. 11, 1972, Ser. No. 313,675
Claims priority, application Japan, Mar. 27, 1970, 45/25,757
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 AQ 29 Claims

Polyamideurethanes, having the combined desirable physical properties of polyamides and polyurethanes, are provided by a polyaddition reaction of an amidediol or a diamidediol with a diisocyanate. The products include both linear and cross-linked polymers characterized by a wide range of inherent viscosity. The substantially linear polymers of the invention are useful as synthetic textile fibers or as filaments. The cross-linked polymers are good construction materials.

3,786,032

VINYL POLYMERIZATION

James Robert Jennings and David Gavin Simon, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,153
Claims priority, application Great Britain, Nov. 20, 1970, 55,244/70, 55,245/70
Int. Cl. C08f *1/34*
U.S. Cl. 260—91.7 27 Claims

Polymerization of vinyl or vinylidene halides using as initiator a mixture of a transition metal compound and an organoaluminum or organozinc compound including a ligand derived from an oxime or a hydroxy ester.

Also, initiator compositions for use in such a process.

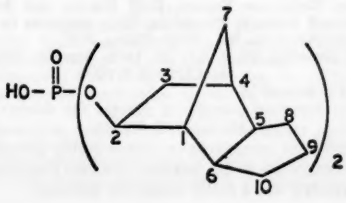
3,786,033

BIS(EXO-TRIMETHYLENENORBORNYL-(2)-EXO) HYDROGEN-PHOSPHATE

Yoshiaki Inamoto, Wakayama, and Takeji Kadono, Kainan, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 23, 1971, Ser. No. 156,113
Claims priority, application Japan, June 24, 1970, 45/54,976
Int. Cl. C07f *9/08*
U.S. Cl. 260—958 1 Claim

A compound of the formula



is prepared by esterifying 2-exo-hydroxy-exo-trimethylenenorbornane with phosphoric acid. The compound is useful as an additive for synthetic lubricating oils and hydraulic oils.

3,786,034

POLYURETHANE POLYMERS FOR USE IN SOFT LENSES AND METHOD OF PRODUCING SOFT LENSES

Edgar Allan Blair, Princeton, and Donald Edward Hudgin, Princeton Junction, N.J., assignors to Frigitronics, Inc., Shelton, Conn.

No Drawing. Filed June 23, 1972, Ser. No. 265,543
Int. Cl. B29d *11/00*; G02c *7/04*; C08g *22/08*
U.S. Cl. 260—77.5 AQ **9 Claims**

The use of water absorbtive polyurethane polymers of resins of low equivalent weight and high molecular weight and slightly in excess of equimolar ratios of polyisocyanates or urethane linkage precursors for making soft lenses and for soft contact lenses made from said polymer.

3,786,035

ALKALI METAL SULFIDE-ARYLENE SULFIDE POLYMER PROCESS

Jack S. Scoggin, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 15, 1972, Ser. No. 253,007
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 **7 Claims**

An improved process for the preparation of arylene sulfide polymers is described wherein alkali metal sulfide reactants are prepared and reacted with polyhalo-substituted aromatic compositions in the preparation of arylene sulfide polymers in a reaction medium free of air or oxygen.

3,786,036

PROCESS FOR PRODUCING 2-ALKYL-SUBSTITUTED 1,3-CONJUGATED DIENE POLYMER

Hidetoshi Yasunaga, Tatsusuke Chikatsu, Chihiro Nozaki, and Yoshinori Yoshida, Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,877
Claims priority, application Japan, Sept. 18, 1970, 45/81,246; Dec. 7, 1970, 45/107,663
Int. Cl. C08d *3/04*
U.S. Cl. 260—94.2 M **22 Claims**

A 2-alkyl-substituted 1,3-conjugated diene polymer having a high cis-1,4 configuration content and having a high molecular weight can advantageously be produced by polymerizing a 2-alkyl-substituted 1,3-conjugated diene with a catalyst consisting essentially of at least one organolithium compound and carbon disulfide in a proportion of 0.01 to 1.0 mole of carbon disulfide per atom of active lithium and optionally 1,2-diene hydrocarbons. The vulcanizate of said polymer is very similar in physical properties to that of a natural Hevea rubber.

3,786,037

PROCESS FOR DECREASING ETHYLENIC POLYUNSATURATION IN ORGANIC CARBOXYLIC ACIDS USING A CO-CATALYST

Arthur Waldemar Krause, Gulf Breeze, and Malcolm Edward Hannah, Pensacola, Fla., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,577
Int. Cl. C09f *7/00*
U.S. Cl. 260—97.5 **21 Claims**

This invention provides a process for decreasing the ethylenic polyunsaturation by reacting polyunsaturated aliphatic acid compounds or diunsaturated cycloaliphatic acid compounds in the presence of iodine disproportionation catalyst and a metal compound activator.

3,786,038

PEPTIDE BOND FORMATION IN THE PRESENCE OF TRIARYL PHOSPHITES AND HETEROCYCLIC DISULFIDES

Teruaki Mukaiyama and Masaaki Ueki, Tokyo, and Manabu Suzuki, Hiratsuka, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,434
Claims priority, application Japan, June 29, 1971, 46/47,415
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.5 **5 Claims**

Improved and commercially advantageous process for the preparation of a peptide which comprises reacting a carboxyl component which is an amino acid or peptide having free carboxyl group and other protected reactive functional groups with an amino component which is an amino acid or peptide having free amino group and other protected reactive functional groups in the presence of a triaryl phosphite and a disulfide of a mercaptoheterocyclic compound containing a nitrogen-carbon double bond with which the disulfide linkage is conjugated.

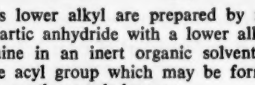
3,786,039

METHOD OF PRODUCING α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTERS

Yasuo Ariyoshi and Masanori Nagao, Kawasaki, Naotake Sato, Tokyo, Akira Shimizu, Kawasaki, and Jiro Kirimura, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,972
Claims priority, application Japan, Apr. 30, 1969, 44/33,349
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **2 Claims**

Lower alkyl esters of α-L-aspartyl-L-phenylalanine of the formula



wherein R is lower alkyl are prepared by reacting an N-acyl-L-aspartic anhydride with a lower alkyl ester of L-phenylalanine in an inert organic solvent, and then removing the acyl group which may be formyl, carbobenzoxy, or p-methoxycarbobenzoxy.

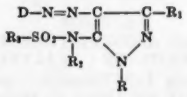
3,786,040

PHENYL- OR NAPHTHYL AZO SULFONAMIDO-PYRAZOLE DYES

Roland Mislin, Saint-Louis, France, and Hanspeter Uehlinger, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 821,502, May 2, 1969. This application May 11, 1971, Ser. No. 142,403
Claims priority, application Switzerland, May 13, 1968, 7,088/68
Int. Cl. C09b *29/38*; D06p *3/24*
U.S. Cl. 260—162 **10 Claims**

Azo dyes of the formula



wherein

D is the radical of a phenyl or naphthyl diazo component,

R is hydrogen, carboxyl, acyl, hydrocarbyl or substituted hydrocarbyl,

R_1 is hydrogen, carboxylic acid ester, carboxylic acid amide or substituted or unsubstituted alkyl, cycloalkyl, alkoxy or aryl,

R_2 is hydrogen, acyl, hydrocarbyl or substituted hydrocarbyl, and

R_3 is hydrocarbyl or substituted hydrocarbyl,

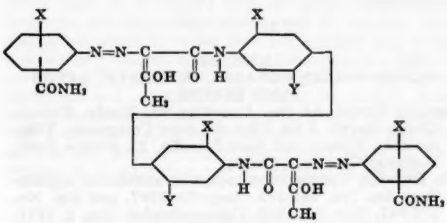
with the proviso that the molecule contains between 1 and 4 sulfo groups, preferably 1 or 2 sulfo groups. These dyes of yellow to orange shade are useful for natural and synthetic polyamide fibres. They exhibit excellent light fastness and perspiration fastness.

3,786,041
MELAMINE-FORMALDEHYDE RESIN CONTAINING ALUMINA HYDRATE
Herbert Talsma, East Cleveland, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
No Drawing. Filed Dec. 8, 1972, Ser. No. 313,494
Int. Cl. C08g *51/18*
U.S. Cl. 260—17.3 **4 Claims**

Melamine-formaldehyde molding resins containing from about 10 to about 900 parts of alumina hydrate per hundred parts of resin are outstanding for preparing molded resin articles requiring exceptional heat and light stability and a minimum of post-mold shrinkage.

3,786,042
BIS-(BENZAMIDOAZO)-4,4'-BI-ACETOACETYL-o-CHLOROANILIDE DYESTUFFS
Francis A. Formica, New Shrewsbury, and James Izenberg, Metuchen, N.J., assignors to Indol Chemical Co., Inc., Carteret, N.J.
No Drawing. Filed July 6, 1971, Ser. No. 160,219
Int. Cl. C09b *33/16*
U.S. Cl. 260—176 **8 Claims**

Disazo-dyestuffs of the formula



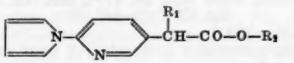
in which X represents H, lower alkyl, alkoxy, or halogen and Y represents H or halogen and all of the X's are not necessarily the same and all of the Y's are not necessarily the same and the $CONH_2$ group is m- or p- to the diazo group. These dyestuffs exhibit good solvent fastness and light fastness, high coloring strength and greenish shades of yellow.

3,786,043
7-METHYL-4-CHLORO (OR -4-LOWER-ALKOXY)-1,8-NAPHTHYRIDINE-3-CARBOXYLATES
R. Pauline Brundage and George Y. Lesher, Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.
No Drawing. Filed June 19, 1972, Ser. No. 263,788
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B **3 Claims**

Lower-alkyl 4 - Q - 7 - methyl-1,8-naphthyridine-3-carboxylates (I) where Q is chloro or lower-alkoxy are prepared by reacting lower-alkyl 1,4-dihydro-7-methyl-4-oxo - 1,8 - naphthyridine - 3 - carboxylate (II) with a chlorinating agent to produce said 4-chloro compound (Ia) which by reaction with alkali metal lower-alkoxide, preferably using lower-alkanol as solvent, produces said 4-(lower-alkoxy) compound (Ib). Said 4-chloro compound when heated with alkali metal lower-alkoxide or said 4-(lower-alkoxy) compound when heated yield the known antibacterially active lower-alkyl 1-(lower-alkyl)-1,4 - dihydro - 7 - methyl - 4 - oxo-1,8-naphthyridine-3-carboxylates.

3,786,044
(6-PYRROL-1-YL)-3-PYRIDINEACETIC ACID DERIVATIVES
Franz Ostermayer, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed May 15, 1972, Ser. No. 253,615
Claims priority, application Switzerland, May 19, 1971, 7,375/71; Apr. 18, 1972, 5,693/72
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 R **8 Claims**

Compounds of the formula



wherein R_1 represents hydrogen or a methyl or ethyl group and R_2 represents hydrogen or a lower alkyl group containing from 1 to 4 carbon atoms and the salts with bases derived from the free carboxylic acids have anti-inflammatory, mild analgesic and antipyretic action, they are active ingredients of pharmaceutical compositions and are useful for the treatment of inflammatory diseases and of pain of varying origin. An illustrative example is α-methyl-6-(pyrrol-1-yl)-3-pyridyl-acetic acid.

3,786,045
CERTAIN 10,11-BIS(BROMOMETHYL)-DIBENZAZEPINES
Hans Blattner and Walter Schindler, Riehen, near Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application Nov. 19, 1969, Ser. No. 878,177, now Patent No. 3,646,046. Divided and this application Sept. 18, 1972, Ser. No. 290,033
Claims priority, application Switzerland, Dec. 19, 1968, 18,946/68
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D **1 Claim**

Compounds of the class of 1,2,3,8-tetrahydro-dibenzo-[b,f]pyrrolo[3,4-d]azepines and pharmaceutically acceptable acid addition salts thereof have a depressant effect on the central nervous system; they can be prepared from N-substituted 10,11 - bis - bromomethyl - 5H - dibenz[b,f]azepines and a primary amine; the compounds are active ingredients of pharmaceutical compositions; an illustrative embodiment is 2-ethyl - 1,2,3,8 - tetrahydrodibenzo[3,4-d]azepine.

3,786,046
NOVEL CYANINE DYES WITH ENAMINES CONTAINING TWO FUSED CARBOCYCLIC RINGS
Arthur Fumia, Jr., Hilton, and Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application June 4, 1969, Ser. No. 830,483, now Patent No. 3,655,392, dated Apr. 11, 1972. Divided and this application Dec. 29, 1971, Ser. No. 213,533
Int. Cl. C09b *23/10*
U.S. Cl. 260—240 R **12 Claims**

Novel cyanine and merocyanine dyes are provided which feature a nucleus selected from the group consisting of a 1 - (3,4,4a,5,6,7-hexahydro-2-naphthyl)pyrrolidine group, a 1-(3,3a,4,5-tetrahydro-2H-inden-6-yl)pyrrolidine group, a 1-(2-norbornylidene)pyrrolidine group, and a 1-(1-indanylidene)pyrrolidine group.

3,786,047
METHINE DYESTUFFS
Hans-Peter Kuhlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Aug. 17, 1971, Ser. No. 172,585
Claims priority, application Germany, Aug. 17, 1970, P 20 40 653.5
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.8 **17 Claims**

Methine dyestuffs, processes for their manufacture and their use for dyeing and printing of polyacrylnitrile, co-

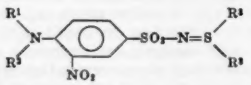
polymers of acrylnitrile with other vinyl compounds, acid modified aromatic polyesters, acid modified polyamides, leather, tanned cotton, cellulose, polyurethanes and for the production of writing liquids and stamping inks.

3,786,048
SULFILIMINE COMPOUNDS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,644
Int. Cl. C07c *143/80*
U.S. Cl. 260—239.6 **3 Claims**

The present invention is directed to novel compounds of the formula



which compounds are useful as herbicides. In the above and succeeding formulae herein, R^1 represents hydrogen or R^2, and each R^2 independently represents loweralkyl of C_1–C_4, loweralkenyl of C_3–C_4, loweralkynyl of C_3–C_4, or radical of the formula $—CH_2—CH_2\{CH_2\}_nY$ wherein n represents 0 or 1, and Y represents methoxy, cyano, bromo, or chloro, subject to the limitation that the groups represented by R^1 and R^2 together contain from 2 to 8, both inclusive, carbon atoms; and each R^3 is taken separately and independently represents loweralkyl of C_1–C_3 or phenyl, subject to the limitation that both R^3 groups together, do not contain more than 8 carbon atoms, or both R^3 groups are taken together, and represent a divalent radical selected from the group consisting of $\{CH_2\}_3—O\{CH_2\}_2$ and $\{CH_2\}_q$ wherein q represents 4, 5, or 6.

3,786,049
PROCESS FOR THE PREPARATION OF N-ACYLATED DERIVATIVES OF 6-AMINO PENICILLANIC ACID

Antonio Luis Palomo-Coll, Maestro Perez Cabrero 7, Barcelona, Spain

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,338
Claims priority, application Spain, Dec. 21, 1968, 361,743; May 12, 1969, 367,136; July 26, 1969, 369,916
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **11 Claims**

A process for the preparation of amides, hydrazides and esters and of alpha-aminobenzylpenicillin and N-substituted derivatives, consisting of the prior preparation of a dimethylformiminium halosulfite N-halide by adding a solution of dimethylformamide, at room temperature, to a solution of a thionyl halide in an organic solvent, then adding a carboxylic compound and then an amine, a hydrazine or an alcohol to obtain the above-mentioned derived compounds.

3,786,050
DIPHENYL SULFONES

Tsung-Ying Shen, Westfield, William V. Ruyle, Scotch Plains, Michael W. Fordice, Cranford, and Norman P. Jensen, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 73,245, Sept. 17, 1970. This application July 6, 1971, Ser. No. 160,158
Int. Cl. C07c *147/12*
U.S. Cl. 260—239.6 **7 Claims**

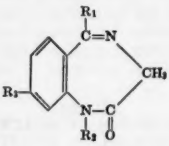
New substituted diphenyl sulfones useful in reducing mortality and decreasing lesion incidence of poultry exposed to Marek's disease are disclosed.

3,786,051
1-(PHENYL OR PYRIDYL)-1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES

Adolf Bauer, Ingelheim am Rhein, Karl-Heinz Weber, Gau Algesheim, Peter Danneberg, Ockenheim, and Klaus Minck, Gau Algesheim, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,836
Claims priority, application Germany, Apr. 8, 1971, P 21 17 438.9
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **15 Claims**

Compounds of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,
R_2 is phenyl, nitrophenyl, trifluoromethyl-phenyl, α-pyridyl or halogenophenyl, and
R_3 is halogen, nitro or trifluoromethyl;

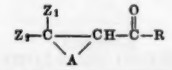
the compounds are useful as psychosedatives and anticonvulsives.

3,786,052
NOVEL CYCLOPROPANECARBOXYLIC ACIDS AND ESTERS

Jacques Martel, 15 Rue Douvillez 93, Bondy, France; Chanh Huynh, 5 bis Allee des deux Communes, Villemomble, France; and Jean Buendia, 32 Avenue Foch, Fontenay Sous Bois, France

No Drawing. Continuation-in-part of abandoned applications Ser. No. 662,278, Aug. 22, 1967, and Ser. No. 879,942, Nov. 25, 1969. This application Aug. 2, 1971, Ser. No. 168,441
Claims priority, application France, Aug. 26, 1966, 74,404, 74,405; Feb. 24, 1967, 96,425; June 16, 1967. 110,719; July 19, 1967, 114,833; Nov. 26, 1968, 175,375
Int. Cl. C07d *5/16*
U.S. Cl. 260—240 R **6 Claims**

Novel cyclopropanecarboxylic acids and esters of the formula



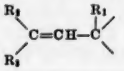
I

wherein Z_1 and Z_2 are selected from the group consisting of hydrogen, alkyl, aralkyl, aryl, alkenyl non-conjugated with the cyclopropane ring, alkynyl non-conjugated with the cyclopropane ring, cycloalkyl, cycloalkenyl and heterocyclic; R is selected from the group consisting of OH and OR′ in which R′ is selected from the group consisting of lower alkyl which may be substituted, benzyl which may be substituted on the phenyl or methylene portion, N-methylene-dicarboximide, (5-benzyl-furyl-3) methyl, and a cyclopentene of the formula

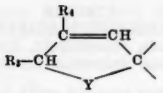
aI

wherein R″ is selected from the group consisting of alkyl, alkynyl, alkenyl, aryl, aralkyl, cycloalkyl, cycloalkenyl

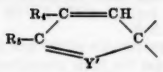
and heterocyclic; A is a bivalent alkyl radical selected from the group consisting of



(a)



(b), and



(c)

wherein R_1 is selected from the group consisting of hydrogen and lower alkyl, R_2 and R_3 are selected from the group consisting of alkyl, alkynyl, alkenyl, aryl, aralkyl, cycloalkyl, cycloalkenyl and heterocyclic and taken together with the carbon atom to which they are attached form a ring selected from the group consisting of carbon homo rings and unsaturated carbon homo rings of 3 to 7 carbon atoms and heterocyclic rings which may be substituted with lower alkyl or lower alkoxy and R_2 and R_3 may together form a polycyclic aromatic radical, R_4 is lower alkyl, R_5 is selected from the group consisting of hydrogen and lower alkyl and R_4 and R_5 together with the carbon atoms to which they are attached may form a saturated or unsaturated carbon homo ring or a heterocyclic ring, Y is selected from the group consisting of methylene and a saturated or unsaturated carbon chain and Y' is selected from the group consisting of methine and a saturated or unsaturated carbon chain with the proviso that when Z_1 and Z_2 are methyl and R_1 is hydrogen, R_2 is other than methyl and their preparation.

3,786,053

PROPIONAMIDO TRIAZINE

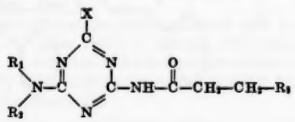
Trevor Chapman, Sittingbourne, England, and Werner Schwarze, Frankfurt, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,411

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **14 Claims**

Triazines of the formula:



wherein X is a lower straight or branched chain alkyl mercapto, a lower alkoxy, benzyl mercapto or phenyl mercapto; R_1 and R_2 are the same or different and are selected from hydrogen, benzyl, cyclohexyl, a lower straight or branched chain alkyl which is unsubstituted or substituted by —OH, —OR, —SR, benzyl, and —CN wherein R is a lower alkyl and wherein R_1 and R_2 may be open or closed with one another to form a 5 or 6 membered ring with or without an oxygen atom presented in the ring; and R_3 is hydrogen, a lower straight or branched chain alkyl mercapto, or a lower alkoxy; have been found to influence the growth of plants and in many instances may be used as herbicides.

3,786,054

3-METHYL-N-METHYLMORPHINANS

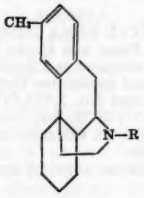
Masuo Murakami, Shigemi Kawahara, and Noriyoshi Inukai, Tokyo, Noriaki Nagano and Hidenori Iwamoto, Ageo, and Hisashi Ida, Urawa, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd.

No Drawing. Filed June 8, 1971, Ser. No. 150,900 Claims priority, application Japan, June 20, 1970, 45/53,918; Feb. 2, 1971, 46/3,945; Feb. 9, 1971, 46/5,413

Int. Cl. C07d *43/32*

U.S. Cl. 260—285 **6 Claims**

A novel morphinan derivative represented by the general formula



wherein R represents an aliphatic hydrocarbon residual group having 1–5 carbon atoms and an acid-addition salt thereof. These compounds have an excellent antitussive activity.

3,786,055

QUINOLINE NITROGEN-HETEROCYCLIC PHOSPHONATES

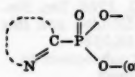
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Feb. 24, 1969, Ser. No. 801,856, now Patent No. 3,673,196. Divided and this application Aug. 19, 1971, Ser. No. 173,295

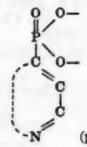
Int. Cl. C07d *33/46, 35/30*

U.S. Cl. 260—283 P **3 Claims**

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is ortho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:



O—(ortho substituted) and

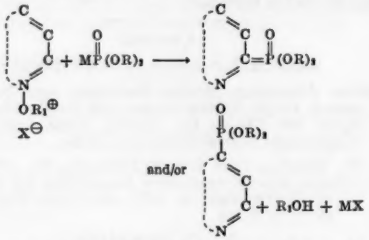


(para substituted)

wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen-heterocyclic compound, wherein the nitrogen atom is in the form of a quaternary alkoxy derivative (N—OR hereinafter defined) with a

phosphite salt, preferably in the form of an ester of the phosphite, as exemplified by the following equation:



These compounds which may be characterized as phosphonates of nitrogen-heterocyclics have many uses including their use as biocides, such as bacteriocides, herbicides, corrosion inhibitors, chelating agents, etc.

3,786,056

ADAMANTYL UREA DERIVATIVES

Carl Richter, Kurt Pluss, and Georg Feth, Schaffhausen, Switzerland, assignors to Cilag-Chemie, A.G.

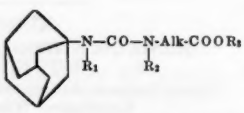
No Drawing. Original application Oct. 28, 1969, Ser. No. 874,084, now Patent No. 3,703,537. Divided and this application July 13, 1972, Ser. No. 271,332

Int. Cl. C07d *29/26*

U.S. Cl. 260—293.56 **2 Claims**

Compounds useful as antiviral agents defined by the formulas:

—NH—CO—NH—$COOC_2H_5$ and



wherein Alk is alkylene, R_1 and R_2 are each hydrogen or lower alkyl, and R_3 is hydrogen or a variously defined ester moiety.

3,786,057

MONOSULFATE SALT OF 3-ETHYL-6,7-DIHYDRO-2 - METHYL-5 (4',4' - ETHYLENE DIOXYPIPERIDINOMETHYL)-INDOLE-4-(5H)-ONE

Harvey Byron Hopps, West Allis, Wis., and John Hans Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.

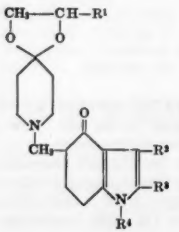
No Drawing. Original application Oct. 2, 1968, Ser. No. 764,594, now Patent No. 3,591,594. Divided and this application Feb. 23, 1971, Ser. No. 118,094

The portion of the term of the patent subsequent to July 6, 1988, has been disclaimed

Int. Cl. C07d *27/56*

U.S. Cl. 260—293.61 **1 Claim**

Compounds of the formula



wherein R^1 represents a member selected from the group consisting of hydrogen, (lower)alkyl, phenyl and benzyl and R^2, R^3, and R^4 each represent a member selected from the group consisting of hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, phenyl and benzyl; and the pharmaceutically acceptable nontoxic salts thereof exhibit tranquilizing and antiemetic activity and are useful as tranquilizers and antiemetic agents in mammals.

3,786,058

CERTAIN BIS(PYRIDINIUM QUATERNARY SALTS)

Philip Neil Edwards, Macclesfield, England, assignor to Imperial Chemical Industries, Limited, London, England

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,648

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 R **14 Claims**

The disclosure relates to novel bis(pyridinium quaternary salts), a process for their manufacture, compositions containing them, and a method of preventing the growth of, or killing, bacteria by applying one of the novel pyridinium salts to a bacterially infected environment.

3,786,059

1,2,3,6-TETRAHYDRO-4-PYRIDYLMETHYL CARBOXYLATES

Gerhard Walther, Ingelheim am Rhein, Rudolf Bauer, Wiesbaden, and Hans-Hugo Hubner and Rolf Banholzer, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

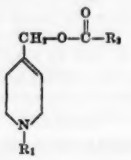
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,708

Claims priority, application Germany, Sept. 2, 1970, P 20 43 455.3

Int. Cl. C07d *31/36*

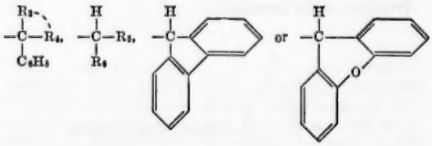
U.S. Cl. 260—295 R **4 Claims**

Racemic mixtures of compounds of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, chloro-(alkyl of 1 to 8 carbon atoms), cyano-(alkyl of 1 to 8 carbon atoms), hydroxy-(alkyl of 1 to 8 carbon atoms), phenyl-(alkyl of 1 to 8 carbon atoms), alkenyl of 3 to 4 carbon atoms or alkinyl of 3 to 4 carbon atoms, and R_2 is



where

R_3 is hydroxyl or, together with R_4 and the carbon atom to which they are attached, a 5- to 6-membered saturated carbocyclic ring,

R_4 and R_5 are each alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 to 6 carbon atoms or phenyl, and

R_6 is cycloalkyl of 5 to 6 carbon atoms or phenyl,

optically active antipodes thereof, quaternary ammonium salts thereof, and non-toxic acid addition salts of said racemates and optically active antipodes; the compounds are useful as anticholinergics.

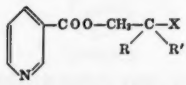
3,786,060

COMPOUNDS, 2-BIS(4-CHLOROPHENOXY)-ETHYL NICOTINATE, 2 - BIS(4 - CHLOROPHENOXY)-PROPYL DINICOTINATE AND 2-(3,4-DIMETHYL-6-ISOBORNYLPHENOXY)-ETHYL NICOTINATE

Jean Mardiguian and Pierre Fournier, Paris, France, assignors to Societe a Responsabilite Limitee dite: MARPHA Societe d'Etudes et d'Exploitation de Marques, Paris, France

No Drawing. Filed July 7, 1970, Ser. No. 53,001
Claims priority, application Great Britain, July 7, 1969, 34,221/69
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 R 4 Claims

Aryloxyalkyl nicotinates of formula



where R=H, hydroxymethyl, nicotinyloxymethyl or X, R'=H or X and X=phenoxy which may be substituted by up to 3 halogens, C_1–C_4 alkyl or isobornyl radicals, and acid addition salts thereof, prepared by reacting nicotinoyl chloride with the alcohol, are useful in the treatment of hypocholesterolaemia, hypolipidaemia and hepatic poisoning.

3,786,061

PYRIDYL-TRIFLUOROMETHYLIMIDAZOLES

Frederick C. Novello, Berwyn, and John J. Baldwin, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 885,362, Dec. 15, 1969. This application June 21, 1972, Ser. No. 265,015
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 10 Claims

4(5)-trifluoromethylimidazoles having optional substituents in the 1 and 2 positions are provided. The novel 4(5)-trifluoromethylimidazoles are prepared by reacting a 1,1-dihalo-3,3,3-trifluoroacetone compound with an appropriate carboxaldehyde and ammonia. The 4(5)-trifluoromethylimidazoles are useful as anti-gout and anti-hyperuricemic agents.

3,786,062

22-DEHYDRO-25-HYDROXYCHOLECALCIFEROL AND PROCESS FOR PREPARING SAME

Collin H. Schroeder and Richard J. Lechnir, Madison, Wis., Peter G. Cleveland, Chicago, Ill., and Hector F. De Luca and Philip H. Derse, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Feb. 16, 1973, Ser. No. 332,882
Int. Cl. C07c *171/10*
U.S. Cl. 260—397.2 1 Claim

22-dehydro-25-hydroxycholecalciferol and process for preparing the same from 3β-acetoxy-22,23-bisnorcholenaldehyde. 22-dehydro-25-hydroxycholecalciferol is characterized by antirachitic activity substantially greater than exhibited by vitamin D_3.

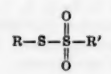
3,786,063

THIAZOLETHIOSULFONATES

Robert J. Arnold, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 24, 1971, Ser. No. 146,481
Int. Cl. C07d *91/44*
U.S. Cl. 260—306.5 5 Claims

Novel compound of the formula



where at least one of R and R' is thiazole. The compound is used as a vulcanization accelerator in vulcanizable diene rubber formulations.

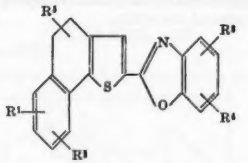
3,786,064

BENZOXAZOLE COMPOUNDS USEFUL AS OPTICAL BRIGHTENING AGENTS

Horst Harnisch, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,860
Claims priority, application Germany, Apr. 5, 1969, P 19 17 601.3; Oct. 25, 1969, P 19 53 809.1
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 D 8 Claims

Benzoxazole compounds of the general formula



in which R^1 and R^2 stand for hydrogen, halogen, alkyl groups, or together stand for the residual members of a cycloaliphatic ring; R^3 denotes hydrogen, halogen, an alkyl, cycloalkyl, aralkyl, aryl, carboxylic acid ester, carboxylic acid amide, alkylsulphonyl, arylsulphonyl radical, or an aminosulphonyl radical; R^4 stands for hydrogen or an alkyl radical; R^3 and R^4 together may also be the residual members of a cycloaliphatic ring; and R^5 denotes an alkyl radical or hydrogen, as well as their preparation and their use as optical brightening agents.

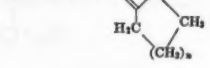
3,786,065

N,N-DIMETHYL-O-[- SUBSTITUTED - 3,4 - POLYMETHYLENE-PYRAZOLYL-(5)]-CARBAMIC ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 28, 1972, Ser. No. 284,325
Claims priority, application Germany, Sept. 3, 1971, P 21 44 124.7
Int. Cl. C07d *49/36*
U.S. Cl. 260—310 R 8 Claims

N,N - dimethyl - O - [1-substituted-3,4-polymethylene-pyrazolyl-(5)]-carbamic acid esters of the formula:



(I)

in which

R is an alkyl radical with up to 6 carbon atoms optionally substituted by a nitrile group, and

n is 1 or 2,

which possess insecticidal properties.

3,786,066

PROCESS FOR PREPARING ϵ-THIOCAPROLACTONES

Peter Ernst Fritze, West Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,344
Int. Cl. C07d *67/00*
U.S. Cl. 260—327 R 18 Claims

Substituted and unsubstituted ϵ-thiocaprolactones are readily prepared in a two step process. In the first step

an ε-caprolactone and carbon disulfide or carbonyl sulfide are reacted to an oligomer product, and in the second step the oligomer product undergoes a base catalyzed rearrangement to form the ε-thiocaprolactone.

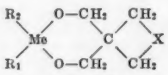
3,786,067
CYCLIC ORGANOMETALLIC COMPOUNDS

Peter E. Throckmorton and William J. McKillip, Worthington, Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

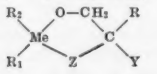
No Drawing. Filed Feb. 18, 1972, Ser. No. 227,621
Int. Cl. C07d *3/00, 61/00*
U.S. Cl. 260—327 R **17 Claims**

Cyclic organometallic compounds having one of the following structural formulas:

(I)



(II)



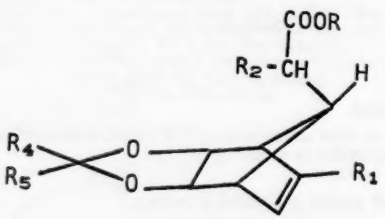
wherein Me is a Group IV–A metal; X is O, S, or CH_2; Y is either NO_2, NH_2, OH, CF_3, or CH_2OH; Z is OCH_2 or is NH or OCH_2 when Y is CH_2OH; R is an alkyl group; and each R_1 and R_2 individually is alkyl, aryl, cycloalkyl, aralkyl, and alkaryl; and the method of preparation. The compounds are particularly useful as catalysts for reactions involving isocyanates or isothiocyanates.

3,786,068
INTERMEDIATE IN THE TOTAL SYNTHESIS OF ELENOLIC ACID

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Aug. 24, 1970, Ser. No. 66,557, now Patent No. 3,703,530, dated Nov. 21, 1972. Divided and this application Apr. 12, 1972, Ser. No. 243,489
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **2 Claims**

A compound of the formula:



wherein R is alkyl of 1 to 8 carbon atoms, inclusive, R_1 is alkyl of 1 to 4 carbon atoms, R_2 is hydrogen or alkyl of 1 to 4 carbon atoms, and R_4 and R_5 are hydrogen, alkyl of 1 to 4 carbon atoms, inclusive or phenyl, with the proviso that only one of R_4 and R_5 is phenyl, is produced in a multistep reaction.

The compound is an intermediate for elenolic acid.

3,786,069
ISOMERIZATION OF LACTONES TO GIVE ALKYLBUTYROLACTONES

Paul Aviron-Violet and Yves Colleuille, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 4, 1971, Ser. No. 140,264
Claims priority, application France, May 6, 1970, 7016613
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **6 Claims**

5-alkyl-γ-butyrolactones are obtained by isomerizing a lactone of formula

where n=4, 5, 6 or 7 in the presence of a solid acidic catalyst. Vapor of the starting lactone is contacted with the solid catalyst which exhibits either Bronsted or Lewis acidity e.g. boron phosphate or phosphoric acid.

3,786,070
PROCESS FOR PREPARATION OF CIS-CHRYSANTHEMIC ACIDS

Jacques Martel, Bondy, and Jean Buendia, Fontenay-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,945
Claims priority, application France, Mar. 4, 1969, 6905865
Int. Cl. C07d *7/18*
U.S. Cl. 260—343.2 R **9 Claims**

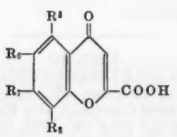
A process for the preparation of racemic cis chrysanthemic acid or of the (1R,2S) configuration or of the (1S,2R) configuration beginning respectively from racemic trans 3,3-dimethyl-2-(2′-hydroxy-2′-methylpropyl)-cyclopropane1-carboxylic acid or of the (1S,2S) configuration or of the (1R,2R) configuration.

3,786,071
CHEMICAL COMPOUNDS CHROMONE-2-CARBOXYLIC ACIDS

Hugh Cairns, Albert Chambers, and Thomas Brian Lee, Loughborough, England, assignors to Fisons Limited, London, England

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,214
Claims priority, application Great Britain, Aug. 25, 1970, 40,777/70; Sept. 15, 1970, 43,984/70; Dec. 11, 1970, 58,860/70; June 3, 1971, 18,807/71
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 **28 Claims**

There are described certain mono-chromone-2-carboxylic acids of formula,



(I)

having one substituent in the 5 or 6 position or having 2 or more substituents in the 5, 6, 7 or 8 positions. There are also described processes for making the compounds and pharmaceutical compositions, for the treatment of asthma, containing the compounds.

3,786,072

PREPARATION OF ALKYL SUBSTITUTED UNSATURATED POLYBASIC ACID ANHYDRIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,579

Int. Cl. C07c *57/19, 61/102*

U.S. Cl. 260—345.9 9 Claims

Alkyl-substituted unsaturated polybasic acid anhydrides are prepared by condensing saturated hydrocarbons with poly-halo-substituted unsaturated polybasic acid anhydrides in the presence of free radical-generating compounds at elevated temperatures to produce the desired product.

3,786,073

SEPARATION PROCESS

Walter Frey, Muttenz, Basel-Land, and Istvan Toth, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,615

Claims priority, application Switzerland, Aug. 24, 1970, 12,610/70

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 6 Claims

Solid anthraquinone nitration products suspended in the nitration medium consisting mainly of nitric acid and phosphoric and/or sulphuric acid are flushed out by an organic flushing agent which is insoluble or sparingly soluble in the mother liquor has a lower specific gravity than the mother liquor and exercises wetting action upon the nitration products; by this process very pure 1-nitroanthraquinone can be obtained.

3,786,074

1,4-DIAMINO-2-ALKYLTHIOPHENOXY-3-HALOANTHRAQUINONE POLYESTER DYES

Guido Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Paterson, N.J.

No Drawing. Filed Apr. 11, 1972, Ser. No. 243,059

Int. Cl. C09b *1/54*

U.S. Cl. 260—380 5 Claims

1,4-diamino-2,3-dihaloanthraquinones are reacted with an alkylthiophenol in an alkaline medium to produce 1,4-diamino-2-alkylthiophenoxy-3-haloanthraquinones useful as dyes for polyester fibers.

3,786,075

HYDROXY ETHERS HAVING ODORANT PROPERTIES

Paul Jose Teisseire and Bernard Auger, Grasse, France, assignors to Societe Anonyme des Etablissements Roure-Bertrand Fils & Justin Dupont, Grasse, France

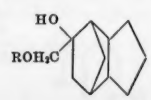
No Drawing. Filed Mar. 23, 1971, Ser. No. 127,359

Claims priority, application Switzerland, Apr. 6, 1970, 5,068/70

Int. Cl. C07c *43/18*

U.S. Cl. 260—611 F 4 Claims

Compounds of the formula



(I)

wherein R is lower alkyl or phenyl are disclosed. Said compounds are useful odorants finding utility in perfume formulations. A process for producing said compounds is also given.

3,786,076

LIPOAMINOACIDS

Jean V. Morelle, 170 Avenue Parmentier, 75 Paris 10eme, France

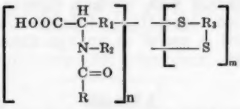
No Drawing. Continuation-in-part of application Ser. No. 672,975, Oct. 5, 1967. This application Dec. 18, 1969, Ser. No. 886,379

Claims priority, application France, Oct. 13, 1966, 79,767; May 31, 1967, 108,515; Dec. 20, 1968, 179,384

Int. Cl. C08h *3/00*

U.S. Cl. 260—402.5 6 Claims

Water-insoluble, lipo-soluble composites of alpha-(fatty acid amido) carboxylic acids of the formula



wherein R is an aliphatic hydrocarbon chain of 5–29 carbon atoms; R_1 and R_2 are hydrogen, an unsubstituted or substituted aliphatic hydrocarbon group wherein the substituents are carboxy, hydroxy, thio, alkylthio, unsubstituted amino, or substituted amino, and R_1 and R_2 may additionally be lower alkylene when joined together to form a cyclic structure; R_3 is lower alkylene; $n=1$ when $m=0$, and $n=2$ when $m=1$. These composites are especially useful in therapeutic, dermatologic, and cosmetic preparations to be applied to human skin for their assistance in penetrating the cutaneous tissues.

3,786,077

PROCESS FOR FORMING MONOCARBOXYLIC ACID

Roger E. Chandler, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of applications Ser. No. 337,187, Jan. 13, 1964, now abandoned, and Ser. No. 657,532, Aug. 1, 1967. This application Oct. 12, 1967, Ser. No. 674,722

Int. Cl. C07c *53/22*

U.S. Cl. 260—408 5 Claims

Process for forming monocarboxylic acid by reaction of halogenated polymer of a C_2 to C_5 monoolefin with acrylic acid.

3,786,078

EXTRACTION OF OIL FROM OIL BEARING SEEDS

De Wayne W. Finley, Harvey E. Smith, and Owen L. Fishwild, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,191

Int. Cl. C11b *1/00*

U.S. Cl. 260—412.4 8 Claims

The disclosure is directed to a method of extracting oil from oil bearing vegetable materials. Oil bearing vegetable material having a moisture content below 5 percent is ground and moisturized to a moisture level of up to 9 percent. The material is then subjected to mechanical action to rupture the cells containing the oil and the oil is extracted therefrom by the use of a solvent.

3,786,079

PREPARATION OF COPPER COMPOUND AND PRODUCT THEREOF

Toyozo Yonezawa, Kyoto, Japan, assignor to Sanyo Chemical Co., Ltd., Kyoto, Japan

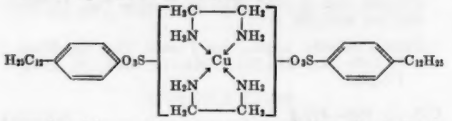
No Drawing. Continuation of abandoned application Ser. No. 846,222, July 30, 1969. This application Sept. 20, 1971, Ser. No. 182,173

Claims priority, application Japan, Aug. 6, 1968, 43/55,256; May 9, 1969, 44/35,137

Int. Cl. C07f *1/08*

U.S. Cl. 260—438.1 **2 Claims**

The compound of the formula:



is produced by reacting an aqueous solution of p-dodecylbenzene sulfonate with cupric chloride at 80 to 90° C. to form cupric p-dodecylbenzene sulfonate, which is reacted in methanol with ethylene diamine to form bis ethylenediamine copper(II) p-dodecylbenzene sulfonate. The compound is useful as an agricultural bactericide and insecticide.

3,786,080

CONTINUOUS PROCESS FOR PRODUCING ALKYLALUMINUM COMPOUNDS

Eiichi Ichiki, Kazuo Iida, Atsuro Matsui, and Hidekimi Kadokura, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1971, Ser. No. 115,476

Claims priority, application Japan, Feb. 19, 1970, 45/14,586

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A **13 Claims**

An alkylaluminum compound is produced continuously and economically with less aluminum loss by reacting hydrogen and an alkylaluminum compound or further an olefin in addition thereto, with an alloy containing aluminum and silicon and having a size larger than that of a metal residue to be withdrawn out of a reaction system in a column-type reactor through passage of said hydrogen, alkylaluminum compound and the olefin, if necessary, through the recator packed with the alloy from the bottom upwards at a temperature of 50°–200° C. under a pressure of 10–300 kg./cm.², withdrawing a metal residue made to pass substantially through 32–100 mesh sizes by the reaction out of the reaction system together with the alkylaluminum compound and separating the alkylaluminum compound from the metal residue.

3,786,081

CRUDE OIL DEMULSIFIERS

Knut Oppenlaender, Ludwigshafen, Gert Liebold, Mannheim, and Egon Buettner, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,723

Claims priority, application Germany, Dec. 4, 1970, P 20 59 707.3

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

Polyoxyalkylated derivatives of carbamic acids for use as quick-acting cold demulsifiers for water-in-oil emulsions.

3,786,082

SYNTHESIS OF ETHYL 4-HALOACETOACETATES

Neil W. Connon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 24, 1972, Ser. No. 301,576

Int. Cl. C07c *67/00, 69/72*

U.S. Cl. 260—483 **6 Claims**

Ethyl 4-haloacetoacetates are synthesized by a modified Reformatsky reaction of an ethyl haloacetate with magnesium in a chlorinated hydrocarbon solvent, comprising steps of:

(a) reacting magnesium and ethyl haloacetate at reflux in a chlorinated hydrocarbon solvent selected from the group consisting of chloroform and dichloromethane to form a magnesium enolate complex and solvent mixture;

(b) diluting said mixture with water to precipitate said magnesium enolate complex;

(c) washing said magnesium enolate complex with water;

(d) mixing said washed magnesium enolate complex and a quantity of the same chlorinated hydrocarbon solvent and acidifying said mixture with sulfuric acid at a temperature below about 30° C. to hydrolize said complex to form said ethyl 4-haloacetoacetate; and

(e) recovering said ethyl 4-haloacetoacetate.

3,786,083

PROCESS FOR THE PREPARATION OF ACYL SUCCINIC ACID DIALKYL ESTERS

Ewald Schmidt, Bischofsheim, Hanswilli von Brachel, Leopoldshohe, Rolf Müller, Frankfurt am Main, and Horst Kindler, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

Filed Nov. 3, 1972, Ser. No. 303,491

Claims priority, application Germany, Nov. 8, 1971, P 21 55 360.6

Int. Cl. C07c *67/00*

U.S. Cl. 260—483 **5 Claims**

Reaction of an excess of an aldehyde and maleic acid dialkyl ester to produce the title product wherein the reaction components are continuously conducted through a reactor and the supply rate thereof and the heat elimination of the reactor are regulated to obtain the desired reaction temperature and residence time.

3,786,084

PREPARATION OF ESTERS OF FORMIC ACID

Pierre Marie Joseph Ghislain de Radzitzky d'Ostrowick, 101 Avenue Paul Hymans, and Alain Joseph Guillaume De Roocker, 149 Avenue des Capricorne, both of Brussels, Belgium

No Drawing. Filed Jan. 12, 1973, Ser. No. 322,988

Int. Cl. C07c *17/00, 29/00, 67/00*

U.S. Cl. 260—491 **1 Claim**

N,N-dialkyl (2-halo-1-substituted ethoxymethylene) immonium halides are formed by halogenation of olefines in the presence of N,N-dilower alkyl formamide to form new compounds and derivatives. The compounds are decomposed to valuable 1,2-dihalocompounds, 1-halo-2-formates and halohydrins by thermal decomposition, hydrolysis or alcoholysis.

3,786,085

ARYL SUBSTITUTED CYCLOALIPHATIC ACIDS

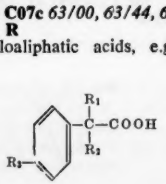
Daniel Frederick Dickel, Berkeley Heights, and George de Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 808,341, Mar. 18, 1969, which is a continuation-in-part of application Ser. No. 789,076, Jan. 2, 1969, which in turn is a continuation-in-part of application Ser. No. 716,290, Mar. 27, 1968. This application Sept. 17, 1969, Ser. No. 858,893

Int. Cl. C07c *63/00, 63/44, 69/00*

U.S. Cl. 260—515 R **3 Claims**

New α-aryl-cycloaliphatic acids, e.g. those of the formula



R_1=H or alk(en)yl
R_2=cycloalk(en)yl or cycloalk(en)ylalkyl
R_3=aliphatic, cycloaliphatic, araliphatic or aromatic radical, CF_3, NO_2, acyl, free or functionally converted OH, SH, carboxy or sulfo

and functional acid derivatives thereof, are anti-inflammatory agents.

3,786,086
PROCESS FOR PREPARING AMMONIUM SALTS OF ALKANOIC ACIDS
Ebbe R. Skov, Middletown, Roderick B. Judge, Montclair, and Goeffrey Hemphill, Manasquan, N.J., assignors to W. R. Grace & Co., New York, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,462
Int. Cl. C07c *51/52*
U.S. Cl. 260—540 **15 Claims**

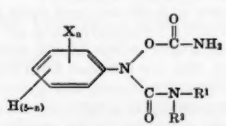
A free flowing particulate solid ammonium salt of an alkanoic acid having 1–10 carbon atoms is prepared by spraying the alkanoic acid into an atmosphere of ammonia vapor in a reaction zone in a manner to prevent the acid spray from contacting the internal surface of the reaction zone.

3,786,087
FLAME AND BURN RESISTANT BUTADIENE RESIN COMPOSITIONS
Wendell R. Conard, Kent, Ohio, and Ronald M. Ellis, Evanston, Ill., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,476
Int. Cl. C08f *29/08*; C09k *3/28*
U.S. Cl. 260—41.5 A **6 Claims**

Tetrabromobenzene strongly inhibits flammability and burning of polybutadiene resins.

3,786,088
N,O-DICARBAMOYL-N-PHENYLHYDROXYLAMINES
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Dec. 5, 1968, Ser. No. 781,585
The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed
Int. Cl. C07c *127/16, 127/18, 127/20*
U.S. Cl. 260—545 R **4 Claims**

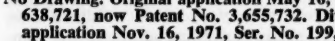
This invention discloses new chemical compounds of the formula



wherein X is selected from the group consisting of alkyl, alkenyl, halogen, haloalkyl, alkoxy, alkylthio, nitro and dialkylamino; n is an integer from 0 to 5; and R^1 and R^2 are independently selected from the group consisting of hydrogen and alkyl. The compounds of this invention are useful as herbicides and fungicides.

3,786,089
FLUORINATED ACRYLIC MONOMERS CONTAINING HETERO ATOMS AND THEIR POLYMERS
Christian Scriver Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application May 16, 1967, Ser. No. 638,721, now Patent No. 3,655,732. Divided and this application Nov. 16, 1971, Ser. No. 199,316
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 S **2 Claims**

Perfluoroalkyl acrylic monomers of the formula



wherein R_f is perfluoroalkyl; R′ and R″ are each alkylene; X is sulfur or —NR‴—; Y is oxygen, sulfur or —NR‴—; R‴ is hydrogen or lower alkyl; and R is hydrogen or methyl. Homopolymers of the above monomers and copolymers of the monomers with copolymerizable vinylidene monomers free of nonvinylic fluorine; both prepared by emulsion polymerization techniques with a free radical catalyst. Mixtures of the above polymers with a polymer derived from a polymerizable vinylidene monomer free of nonvinylic fluorine. Textile fabrics treated with the above polymers and mixtures of polymers to impart oil- and water-repellent properties to the fabric.

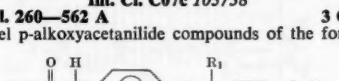
The preparation of the monomers from

$$R_f—R'—X—R''—YH$$

intermediates.

3,786,090
ALKOXYACETANILIDE COMPOUNDS
Anwar Hussain, Lawrence, Kans., assignor to Interx Research Corporation
No Drawing. Filed Sept. 29, 1971, Ser. No. 184,933
Int. Cl. C07c *103/38*
U.S. Cl. 260—562 A **3 Claims**

Novel p-alkoxyacetanilide compounds of the formula:



wherein R_1 is hydrogen, alkyl, alkoxy, cycloalkyl or monocyclic aryl, R_2 is alkyl, alkoxy, cycloalkyl or monocyclic aryl, R_3 is alkyl, cycloalkyl or monocyclic aryl, and n is 0 to 4. The compounds are useful as analgesics and antipyretics.

3,786,091
PHOSPHORIC ACID SALTS OF LONG CHAIN AMINO COMPOUNDS
Friedrich Bolsing, Lindhorst, Germany
(% Knapsack Aktiengesellschaft, Knapsack, Germany)
No Drawing. Continuation-in-part of abandoned application Ser. No. 44,900, June 9, 1970. This application Dec. 15, 1971, Ser. No. 208,395
Claims priority, application Germany, June 23, 1969, P 19 31 768.1
Int. Cl. C07c *87/04*
U.S. Cl. 260—583 R **2 Claims**

Production of a phosphoric acid-containing paste base. The paste base is produced by preparing a finely divided aqueous dispersion of a long-chain amine, preheating the dispersion, introducing preheated phosphoric acid thereinto, with vigorous agitation, at elevated temperature and until neutral, and stirring the resulting mixture until cold.

3,786,092
3-NITROPROPIONIC ACID DERIVATIVES
Gianluigi Soldati, Naugatuck, and Allen E. Smith, Bethany, Conn., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Apr. 14, 1969, Ser. No. 816,081
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 R **23 Claims**

Novel 3-nitropropionic acid derivatives, namely 3-nitropropionamides and 3-nitropropionanilides, possess fungicidal, insecticidal, viricidal, and other activity.

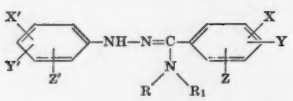
3,786,093
NOVEL BISAMIDES CONTAINING FLUORINE
Bernard M. Lichstein, Elizabeth, and Robert J. Du Bois, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,372
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 HL **7 Claims**

Novel compounds useful in imparting oil repellency to fabrics have the formula $(R_fCONH)_2CHR$ wherein R_f

is a radical containing at least one fluorine atom and from 1 to 20 carbon atoms, the radical being selected from the group consisting of alkyl, phenyl, alkylphenyl, phenylalkyl, and any of these radicals containing an ether linkage, and R is hydrogen, trichloromethyl, or phenyl. The compounds are prepared by reacting a nitrile of the formula R_fCN with formaldehyde, chloral, chloral hydrate or benzaldehyde in the presence of a catalytic amount of a strong acid and preferably also in the presence of a solvent such as carbon tetrachloride.

3,786,094
NOVEL PHENYLHYDRAZONES
Jacques Perronnet and Pierre Girault, Paris, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Sept. 15, 1971, Ser. No. 180,851
Claims priority, application France, Sept. 17, 1970, 7033717
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **8 Claims**

Phenylhydrazones of the formula



(I)

wherein X and Y are selected from the group consisting of hydrogen, chlorine, bromine, lower alkoxy, lower alkyl, NO_2 and CF_3, Z is selected from the group consisting of hydrogen, chlorine, bromine, lower alkoxy, lower alkyl and NO_2, X′ is selected from the group consisting of hydrogen, chlorine, bromine, benzyloxy, NO_2, SCN, CF_3, lower alkyl and lower alkoxy, Y′ is selected from the group consisting of hydrogen, chlorine, bromine, —NO_2, CF_3 and lower alkyl, Z′ is selected from the group consisting of hydrogen, chlorine, bromine and lower alkyl, R and R_1 may be different and are selected from the group consisting of hydrogen, lower alkyl, benzyl, cycloalkyl of 3 to 8 carbon atoms, furfuryl and aryl optionally substituted with a member of the group consisting of chlorine, bromine and lower alkoxy and taken together with the nitrogen atom to which they are attached form a 5 to 7 ring member heterocyclic with the proviso that at least one of X, Y, Z, R, R_1, X′, Y′ and Z′ is other than hydrogen which have remarkable fungicidal activity, their preparation and novel intermediates therefore.

3,786,095
5,11-DIHYDRO-10H-DIBENZO[a,d]CYCLOHEPTEN-10-ONES
Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Continuation of abandoned application Ser. No. 744,674, July 15, 1968. This application Aug. 4, 1971, Ser. No. 169,561
Claims priority, application Switzerland, Aug. 3, 1967, 11,056/67
Int. Cl. C07c *87/40*
U.S. Cl. 260—570.8 TC **7 Claims**

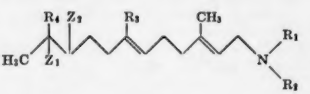
5-[3 - (substituted amino) - alkylidene]-5,11-dihydro-10H - dibenzo[a,d]cyclohepten - 10 - ones, 5-[3-(substituted amino)-alkyl]-5,11-dihydro-10H - dibenzo[a,d]cyclohepten-10-ones and analogs thereof are prepared, inter alia, from the correspondingly substituted 3-[10-X-5H-dibenzo[a,d]cyclohepten - 5 - ylidene]-N-substituted alkyl amines and 3-[10 - X - 5H-dibenzo[a,d]cyclohepten-5-yl]-N-substituted alkyl amines, wherein X is halogen, alkoxy, aralkoxy, amino or substituted amino. The products are useful as antidepressants.

3,786,096
RECOVERY OF ADIPIC ACID
Kazuhiko Konno, Ibaraki-ken, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
No Drawing. Filed Mar. 1, 1971, Ser. No. 120,048
Claims priority, application Japan, Mar. 24, 1970, 45/24,738
Int. Cl. C07c *51/48*
U.S. Cl. 260—537 R **6 Claims**

A dibasic-acid mixture comprising adipic acid and succinic acid is subjected to an extraction operation wherein use is made of an extractant system comprising water and cyclohexanone and/or cyclohexanol thereby to cause preferential extraction of adipic acid into an organic phase.

3,786,097
N,N-DIALLYL-3,7,11-TRIMETHYL-2,6,10-DODECATRIENYLAMINE
Friedrich Karrer, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed June 22, 1971, Ser. No. 155,602
Claims priority, application Switzerland, June 26, 1970, 9,706/70; Oct. 8, 1970, 14,890/70
Int. Cl. C07c *87/24*
U.S. Cl. 260—583 H **1 Claim**

New terpenoid compounds, their manufacture and use for influencing the development of insects and representatives of the order Acarina. The compounds correspond to the formula



wherein

Z_1 and Z_2 are each hydrogen or together form a carbon carbon bond or an oxygen bridge,

R_1 is C_2–C_4 alkenyl, C_2–C_4 alkinyl, cycloalkyl, C_1–C_4 haloalkyl, substituted phenyl, C_2–C_4 haloalkenyl or acyl, and

R_2 is hydrogen, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkinyl or acyl, or

R_1 is hydrogen, and

R_2 is C_1–C_4 alkyl, or

R_1 and R_2 together with the nitrogen atom to which they are attached form a 3-membered ring, or

R_1 and R_2 are each acyl groups which, with the nitrogen atom to which they are attached form a substituted or unsubstituted heterocyclic ring, and

R_3 and R_4 are each methyl or ethyl.

3,786,098
PRODUCTION OF POLYALKYL PHENOLS AND POLYALKYL NAPHTHOLS BY OXIDATION OF POLYALKYL BENZENES AND POLYALKYL NAPHTHALENES WITH HF-H_2O_2
Louis Schmerling, Riverside, and Jerome A. Vesley, Park Ridge, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 797,694, Feb. 7, 1969. This application May 15, 1972, Ser. No. 253,367
Int. Cl. C07c *37/00*
U.S. Cl. 260—586 B **8 Claims**

Concurrent isomerization of, and nuclear addition of an oxygen-containing substituent to, an alkylaromatic compound containing a minimum of 3 alkyl substituents is accomplished by treating the compound with hydrogen peroxide in the presence of hydrogen fluoride at a temperature in the range of from about —10° to about 100° C.

3,786,099

PROCESS FOR THE PREPARATION OF CYCLODECANONE

Frederick Harold Howell, Maghull, near Liverpool, England, assignor to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Filed Nov. 20, 1967, Ser. No. 684,526

Int. Cl. C07c 49/27

U.S. Cl. 260—586 A 1 Claim

Cyclodecanone is produced by catalytic hydrogenation of 6-hydroxy cyclodecanone, and is converted to sebacic acid. The latter can also be produced by oxidation of mixtures of cyclodecanone and cyclodecanol, or cyclodecanol alone. Inducement and control of exothermic reaction during the conversion to sebacic acid are described.

3,786,100

KETO SUBSTITUTED ALKYLIDENEDITHIO-BISPHENOLS

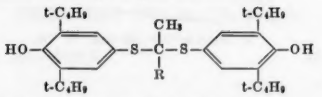
Martin B. Neuworth, Trumbull, Conn., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Original application June 23, 1969, Ser. No. 835,811, now abandoned. Divided and this application Dec. 10, 1971, Ser. No. 206,929

Int. Cl. C07c 149/32

U.S. Cl. 260—590 1 Claim

Compounds having the general formula:



where R is an alkyl radical substituted by a radical selected from the class consisting of alkoxy, carbonyl and ester radicals. The compounds are useful for reducing blood cholesterol in warm-blooded animals.

3,786,101

PURIFICATION OF MERCAPTOALKYL N-ALKYL SULFIDES

Edward E. Huxley, Borger, Tex., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,839

Int. Cl. C07c 149/02

U.S. Cl. 260—609 C 7 Claims

Crude mercaptoalkyl n-alkyl sulfides containing nitrogen impurities are purified by contacting wtih a paraffinic hydrocarbon solvent which selectively removes the sulfides. The mercaptoalkyl n-alkyl sulfides have utility as metal tarnish preventive agents.

3,786,102

TRANSVINYLATION CATALYST

John J. Godfrey, Murrysville, Pa., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 883,241, Dec. 9, 1969. This application Aug. 9, 1971, Ser. No. 170,295

Int. Cl. C07c 41/00, 41/10

U.S. Cl. 260—615 R 6 Claims

A transvinylation catalyst consisting essentially of a mercury(II) salt of a strongly acidic sulfonated hydrocarbon ion exchange resin and an effective amount of a sterically hindered tertiary amine. A process for preparing a first vinyl ether comprising contacting a second vinyl ether and an alcohol or phenol with said catalyst.

3,786,103

METHOD FOR REMOVING A SMALL AMOUNT OF COMPONENTS FROM A HIGHLY VISCOUS POLYMER SOLUTION CONTAINING SAID COMPONENTS AND AN APPARATUS THEREFOR

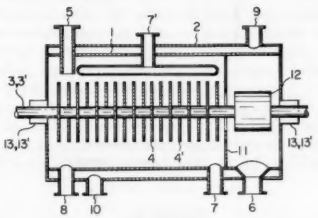
Tetsuya Takamatsu, Toshio Yoshimoto, Tsuneaki Narumiya, Hiroshi Yoshii, and Tsuneo Wakamatsu, Tokyo, Saburo Fukui, Hiroshima, Hikokusu Kajimoto, Akimachi, and Yoichi Kawai, Yoshinori Inaba, and Katsuyoshi Usui, Hiroshima, Japan, assignors to Bridgestone Tire Company Limited and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed July 2, 1971, Ser. No. 159,395

Claims priority, application Japan, July 6, 1970, 45/58,542

Int. Cl. C08d 5/00

U.S. Cl. 260—683.15 R 2 Claims



A small amount of impurities contained in a solution of a high molecular weight substance having a high viscosity is dissolved and removed by contacting said solution with an extracting liquid of a solution having a low viscosity by using a horizontal cylindrical treating vessel provided with two rotary driving shafts parallel to the longitudinal direction of said vessel which rotate in the reverse direction with each other, each of said driving shafts being provided with a plurality of rotary members so that the rotary members on the two driving shafts are overlapped at a given distance without contacting with each other and a partition wall having an opening around and near the driving shaft provided in the vicinity of the last rotary member in the outlet side of the highly viscous solution. The highly viscous solution is stirred while being retained between the rotary members and immersed in the low viscous solution and only the highly viscous solution treated with the low viscous solution is discharged through the opening of the partition wall.

3,786,104

ACRYLONITRILE GRAFT COPOLYMERS AND A PROCESS FOR THE PRODUCTION

Siegfried Korte, Leverkusen, and Carl Hans Süling, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 29, 1972, Ser. No. 267,541

Claims priority, application Germany, June 29, 1971, P 21 32 171.1

Int. Cl. C08f 29/56

U.S. Cl. 260—881 5 Claims

The object of the invention are graft copolymers consisting of a copolymer of N-vinylpyrrolidone and vinylacetate as graft substrate and a copolymer of acrylonitrile and vinylbromide being compolymerized on said graft substrate. Fibres prepared from these graft copolymers show outstanding high flame stabilities. The graft-copolymers are produced by polymerizing a mixture of acrylonitrile and vinylbromide in the presence of a N-vinylpyrrolidone/vinylacetate copolymer.

3,786,105

POLYPHENYLENE OXIDE AND ETHYLENE/STYRENE COPOLYMER BLEND COMPOSITION

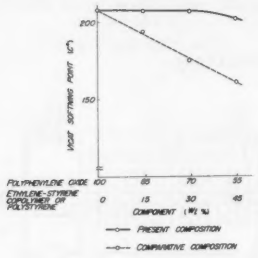
Seizo Nakashio, Nishinomiya, Kanji Yoshikawa, Niihama, Toshio Takemura, Kyoto, and Kunio Ota, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 24, 1972, Ser. No. 246,764

Claims priority, application Japan, Apr. 27, 1971, 46/28,367

Int. Cl. C08f *41/12*

U.S. Cl. 260—897 R **4 Claims**



A composition comprising a mixture of 99 to 40% by weight of a polyphenylene oxide and 1 to 60% by weight of an ethylene-styrene copolymer. The composition displays excellent processability and impact resistance, while retaining a high softening point and a high heat distortion temperature which are inherent to the polyphenylene oxide, and does not cause phase separation.

3,786,106

CYCLOALKYLAROMATIC PRODUCTION

Ernest A. Zuech and Donald L. Crain, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,989

Int. Cl. C07c *5/12*

U.S. Cl. 260—668 R **7 Claims**

Cycloalkylaromatics are produced by the reaction of aromatics with cycloolefins over an active clay catalyst. In one embodiment cyclohexylbenzene is produced by the alkylation of benzene with cyclohexene over active clay catalysts such as Filtrol grade 71, Filtrol grade 62 and Filtrol grade 49 catalysts.

3,786,107

METHOD OF PRODUCING ALKYL AROMATICS

Hiroshi Kuribayashi and Takehiko Takeda, Yokohama, Yoshio Okada, Iwaki, and Takashi Yamauchi, Tokyo, Japan, assignors to Japan Gasoline Co., Ltd., and Kureha Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

No Drawing. Filed Sept. 27, 1972, Ser. No. 292,773

Claims priority, application Japan, Oct. 2, 1971, 46/77,244

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T **8 Claims**

An improvement in the method of producing alkyl aromatic distillates having the boiling point in the range of 230–360° C. and the mean mol number of added olefin in the range of 1–3, which comprises the step of bringing an aromatic distillate other than the above defined alkyl aromatic distillates into contact with a solid acid catalyst not containing any halogenide in the presence or without the presence of olefin having 2–4 carbon atoms while applying such a pressure as being sufficient for retaining the liquid phase of said distillate other than the above defined alkyl aromatic distillates and a temperature in the range of 150–450° C. for a residence time of 0.5 to 10 hours.

3,786,108

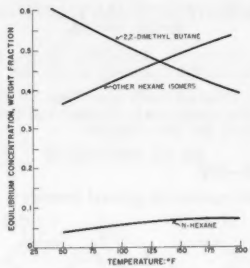
PROCESS FOR THE PRODUCTION OF 2,2-DIMETHYLBUTANE

Joseph P. Giannetti, Allison Park, and Howard G. McIlvried and Raynor T. Sebulsky, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 2, 1972, Ser. No. 277,291

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.66 **10 Claims**



A process for the production of 2,2-dimethylbutane from n-hexane comprising contacting said n-hexane with an initiator, a naphthene inhibitor, and a catalyst system consisting of hydrogen fluoride and boron trifluoride at effective phase contacting conditions within a temperature range of about 50° F. to about 140° F. and wherein the precise reaction conditions to utilize are correlated by an empirical equation to realize at least 80 percent of the theoretically possible yield of 2,2-dimethylbutane.

3,786,109

OLEFIN CONVERSION PROCESS

Arthur L. Jones, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 760,991, Sept. 19, 1968. This application Apr. 12, 1971, Ser. No. 136,181

Int. Cl. C07c *3/20*

U.S. Cl. 260—673 **2 Claims**

An olefin or mixtures of olefins are converted to more complex chemical compounds such as dimers by contact with a liquid metal at an elevated temperature.

Benzene and 1,5-hexadiene are formed on passing a mixture of propylene and air through a molten mass composed of bismuth and tin.

3,786,110

ASPHALTENES FOR INHIBITING POLYMERIZATION OF PYROLYSIS PRODUCTS

Thaddeus J. Oleszko, Burghausen, Germany, assignor to Marathon Oil Company, Findlay, Ohio

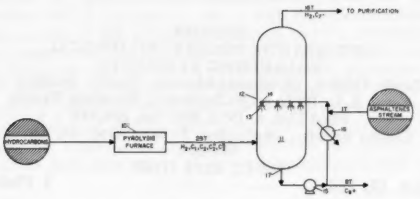
Filed May 19, 1972, Ser. No. 254,956

Int. Cl. C07c *11/24, 3/00*

U.S. Cl. 260—679 R **9 Claims**

Undesired residues from polymers obtained during pyrolysis of petroleum fractions are reduced by incor-

porating unoxidized or partially oxidized asphaltenes into the pyrolysis product streams. The asphaltenes provide sites for polymer molecules to attach themselves; also



asphaltenes are capable of reacting with the highly reactive polyolefins to form low molecular weight polymers—such prevent the forming of high molecular weight polymers.

3,786,111

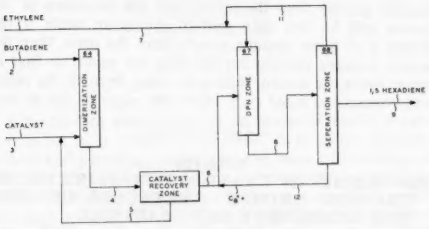
PROCESS FOR THE PREPARATION OF 1,5-HEXADIENE

Van C. Vives, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 27, 1971, Ser. No. 211,962

Int. Cl. C07c *3/62*

U.S. Cl. 260—680 R **10 Claims**



A process for the preparation of 1,5-hexadiene from ethylene and 1,5-cyclooctadiene in the presence of an olefin disproportionation catalyst is described. By maintaining the olefin disproportionation reaction within certain limits to maintain high conversions, the formation of undesirable byproducts such as 1,5,9-decatriene can be avoided. A process for the preparation of 1,5-hexadiene from ethylene and butadiene is also disclosed wherein the 1,5-cyclooctadiene is prepared by cyclodimerization of butadiene.

3,786,112

OLEFIN DISPROPORTIONATION CATALYST

Robert E. Reusser and Stanley D. Turk, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,260

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **14 Claims**

A catalyst for the olefin disproportionation of unsaturated hydrocarbons is provided comprising a physical mixture of a solid disproportionation catalyst and a double bond isomerization catalyst wherein the double bond isomerization catalyst is further treated with a base.

3,786,113

COMPOSITION CONTAINING AN ACRYLIC RESIN, A POLYETHYLENEIMINE, AND A POLYEPOXIDE

Neiko I. Vassileff, Eastchester, N.Y., assignor to National Patent Development Corporation, New York, N.Y.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,258

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **11 Claims**

Polymer compositions showing selective permeability for gas and water vapors are prepared through intimate admixture of a polyacrylic resin with a polyethylenimine in a weight ratio of from about 5:1 to about 2:1, respectively, and cross-linking the resultant mixture. The polyacrylic resin is predominantly composed of monomer units derived from one to five types of carboxy-containing unsaturated monomers such as acrylic acid, methacrylic acid, itaconic acid, the esters thereof, the amides thereof and the nitriles thereof. The polyethylenimine can be unsubstituted or substituted on the imine group by alkyl, hydroxyalkyl, hydroxychloroalkyl, hydroxysulfoalkyl, epoxyalkyl, phenylalkyl, cyanoalkyl or carbamyl groups. At least the polyethylenimine component of the composition is cross-linked, either internally through the use of an agent such as zinc ammonium carbonate or through addition of a cross-linking agent such as an epoxide.

3,786,114

THERMALLY STABLE FLAME RETARDANT POLYCARBONATE COMPOSITION CONTAINING IN ADMIXTURE A POLYCARBONATE AND A PHOSPHINIC OR A PHOSPHORIC ACID ADDITIVE

Donald B. G. Jaquiss, New Harmony, and Frank N. Liberti, Mount Vernon, Ind., assignors to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,153

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **8 Claims**

A thermally stable flame retardant polycarbonate composition having in admixture a flame retardant polycarbonate and an additive which may be either the barium or cadmium salts of either phenyl phosphinic acids or mono- or diphenyl phosphoric acids.

3,786,115

SUSPENSION POLYMERIZATION PROCESS

Hiroshi Osuga, Yokohama, and Shoichi Kobayashi, Tokyo, Japan, assignors to Nihon Polystyrene Kogyo K.K., Kawasaki-ku, Kawasaki-shi, Kanagawa, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 657,014, July 31, 1967. This application Dec. 23, 1970, Ser. No. 101,119

Int. Cl. C08f *1/11, 7/04, 19/08*

U.S. Cl. 260—880 R **17 Claims**

Process for producing styrenic polymer having a particle grain size distribution such that greater than 70% of the polymer particles have a grain size of 14 to 40 mesh, comprising polymerizing, under the conditions of suspension polymerization, an aqueous suspension of a polymerizable styrene monomer or a solution of such a monomer containing a diene polymer, in which the suspension polymerization is conducted while stabilizing the suspension by adding a suspension stabilizing system consisting essentially of about 0.01–1% of hydroxyethyl cellulose and about 0.01–3% of fine particles of a substantially water insoluble, inorganic phosphate and/or carbonate, based on the weight of suspension, and further in which the suspension polymerization is conducted more preferably while adding to the suspension about 0.001–0.02% by weight of an anionic surface active agent based on the weight of the suspension in addition to the above-mentioned additives.

3,786,116

CHEMICALLY JOINED, PHASE SEPARATED THERMOPLASTIC GRAFT COPOLYMERS

Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, Ill., assignors to CPC International Inc.

No Drawing. Continuation-in-part of application Ser. No. 244,205, Apr. 14, 1972, which is a continuation-in-part of application Ser. No. 117,733, Feb. 22, 1971. This application Aug. 21, 1972, Ser. No. 282,099

Int. Cl. C08f *29/12, 29/50*

U.S. Cl. 260—885 **51 Claims**

The present invention relates to thermoplastic graft copolymers comprised of copolymeric backbones containing a plurality of uninterrupted repeating units of the backbone polymer and at least one integrally copolymerized moiety per backbone polymer chain having chemically bonded thereto a substantially linear polymer which forms a copolymerized sidechain to the backbone, wherein each of the polymeric sidechains has substantially the same molecular weight and each polymeric sidechain is chemically bonded to only one backbone polymer.

3,786,117

O-(METHYLCYCLOHEXYL)-S-METHYL-O-(2-CYANOPHENYL)THIOLPHOSPHATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

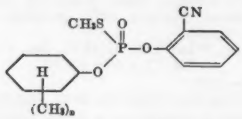
No Drawing. Filed July 7, 1972, Ser. No. 269,698

Claims priority, application Japan, July 16, 1971, 46/52,394

Int. Cl. A01n *9/36;* **C07f** *9/16*

U.S. Cl. 260—940 **7 Claims**

O - (methylcyclohexyl) - S - methyl - O - (2-cyanophenyl)thiolphosphates of the general formula



(I)

in which

n is 1 or 2,

which possess fungicidal and bactericidal properties.

3,786,118

N-ALLYL PHOSPHOROTHIOAMIDATES

Masachika Hirano, Minoo, Kunio Mukai, Nishinomiya, and Hisami Takeda and Katsutoshi Tanaka, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

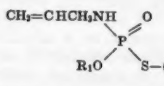
No Drawing. Filed Nov. 11, 1971, Ser. No. 197,923

Claims priority, application Japan, Dec. 17, 1970, 45/114,365

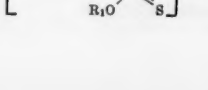
Int. Cl. A01n *9/36;* **C07f** *9/24*

U.S. Cl. 260—948 **10 Claims**

A phosphorothioamidate having the formula,



wherein R_1 is methyl or ethyl, and R_2 is an alkyl having 1 to 4 carbon atoms, which is useful as a systemic pesticide for controlling injurious pests, and which is prepared by the condensation of a thiophosphate having the formula,



wherein R_1 is as defined above, and M is an alkali metal, with a halide having the formula,

$$Hal—(CH_2)_2—S—R_2$$

wherein R_2 is as defined above, and Hal is a halogen.

3,786,119

METHOD FOR PRODUCING OPTICAL POLARIZING ELEMENTS

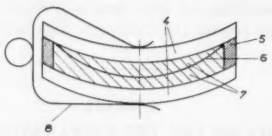
Claude Ortlieb, Strasbourg-Meinau, France, assignor to Vergo S.A., Illkirch-Graffenstaden, Bas-Rhin, France

Filed Dec. 6, 1971, Ser. No. 204,811

Claims priority, application France, Dec. 14, 1970, 7045504

Int. Cl. B29d *11/00*

U.S. Cl. 264—2 **1 Claim**



Optical polarizing elements are produced by cutting from a rigid sheet of polarizing plastic material, screens of appropriate form with suitable axial direction. These screens are then curved under vacuum when hot. The curved screens are coated with an attachment varnish and then placed in a mold which is filled with a polymerizable or polycondensable liquid resin. If the screen is of higher specific gravity than the resin, then the curvature of the screen will be less than that of the resin; while if the screen is of lower specific gravity than the resin, then the screen is more sharply curved than the mold, so that in either event the screen, falling or rising through the resin, will contact the mold only about the edges of the screen.

3,786,120

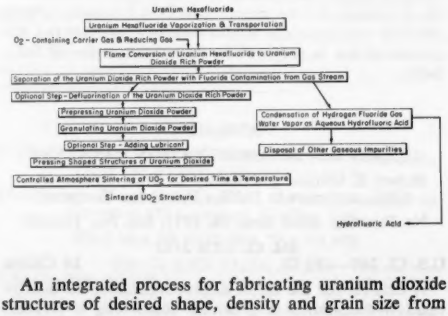
CONVERSION OF URANIUM HEXAFLUORIDE TO URANIUM DIOXIDE STRUCTURES OF CONTROLLED DENSITY AND GRAIN SIZE

William Roger De Hollander, San Jose, Calif., and Harold Holmes Klepfer, Wilmington, N.C., assignors to General Electric Company

Filed Oct. 2, 1970, Ser. No. 77,447

Int. Cl. C01g *43/02*

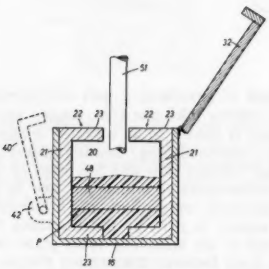
U.S. Cl. 264—.5 **20 Claims**


Uranium Hexafluoride
Uranium Hexafluoride Vaporization & Transportation
O2 - Containing Carrier Gas & Reducing Gas
Flame Conversion of Uranium Hexafluoride to Uranium Dioxide Rich Powder
Separation of the Uranium Dioxide Rich Powder with Fluoride Contamination from Gas Stream
Optional Step - Defluorination of the Uranium Dioxide Rich Powder
Prepressing Uranium Dioxide Powder
Granulating Uranium Dioxide Powder
Optional Step - Adding Lubricant
Pressing Shaped Structures of Uranium Dioxide
Controlled Atmosphere Sintering of UO2 for Desired Time & Temperature
Sintered UO2 Structure
Condensation of Hydrogen Fluoride Gas Water Vapor as Aqueous Hydrofluoric Acid
Disposal of Other Gaseous Impurities
Hydrofluoric Acid

An integrated process for fabricating uranium dioxide structures of desired shape, density and grain size from

enriched uranium hexafluoride is presented. Uranium hexafluoride is reacted with a reducing gas and an oxygen-containing carrier gas in a reduction-hydrolysis reaction in an active flame to yield a uranium dioxide rich powder of high usrface area with fluoride impurities. The powder is separated from the gas stream after the reaction, and if the powder has a high fluoride impurity, the powder is defluorinated by heating under a controlled atmosphere so that the high surface area of the powder is preserved. The powder is then prepressed, granulated, pressed into a structure of desired shape and sintered under a controlled atmosphere to yield a ceramic structure of desired density and grain size. The gas stream from the reaction is treated to condense the hydrogen fluoride and water vapor as aqueous hydrofluoric acid.

3,786,121
METHOD FOR THE FABRICATION OF INSULATED PROFILE MEMBERS
Andre Schaerer, 22 Sangglenstrasse, Zurich, Switzerland
Filed Aug. 20, 1971, Ser. No. 173,399
Int. Cl. B29d *27/04;* **E06b** *7/12*
U.S. Cl. 264—47 **10 Claims**

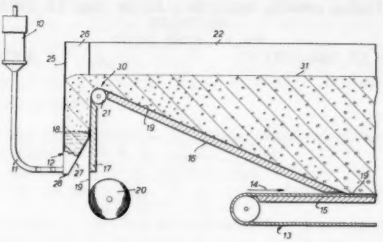


A method of manufacturing an insulated profile member useful as a structural element, such as for window frames and paneling, comprising the steps of inserting at least one profile element into a carrier section serving as the mold, introducing a foamable thermosetting resin into such carrier section, foaming the thermosetting resin under pressure, binding the foamed thermosetting resin with the profile element, thus to produce the profile member having a foamed insulating section of good insulating property rigidly bonded with said profile element.

The insulated profile members produced by this invention comprise at least one profile element and a foamed member rigidly bonded therewith. The foamed member has an outer surface which is essentially free of pores and beneath such a foam structure of high density with very fine closed cells.

3,786,122
METHOD FOR THE CONTINUOUS PRODUCTION OF A FOAMED POLYURETHANE SLAB INVOLVING FLOW FROM A VESSEL OVER A WEIR STRUCTURE
Laader Berg, Spjelkavik, Norway, assignor to Unifoam AG
Filed Aug. 24, 1971, Ser. No. 174,412
Claims priority, application Norway, Sept. 1, 1970, 3,317
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 **9 Claims**

Method for producing continuous polymeric foam slabs, characterized in that the liquid foam reactants are initially introduced into the bottom of a vessel and the resulting foam is allowed to expand upwardly in the vessel due to chemical reaction between the reactants. Prior to completion of the expansion of the mixture, the expanding foam is allowed to flow from the vessel over a weir structure, whereupon the foam completes the expansion process in a channel-shaped conveyor in which the foam



is continuously moved away from the weir structure. According to one embodiment, the foam that flows over the weir moves down an inclined fall plate surface during completion of foam expansion. In another embodiment, the expanding foam passes over the weir directly onto the horizontal reach of a conveyor.

3,786,123
METHOD FOR STABILIZING AND PRESERVING NUTRIENTS AND PRODUCTS
Sol Katzen, Hanassi St. 62, Herzliya Fituach, Israel
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,566
Int. Cl. A61j *3/06;* **B29d** *27/00*
U.S. Cl. 264—53 **7 Claims**

An encapsulating agent and a nutrient are admixed, and then the encapsulating agent is gelatinized or polymerized under high temperature and pressure so as to encapsulate the nutrient. The encapsulation allows the nutrient to be kept in a dry stabilized state for a long period of time without the loss of potency. Further the encapsulation allows the nutrients to be released into the digestive tract after a predetermined amount of time. The digestive tract solubilizes or digests the encapsulating agent thereby freeing the nutrient. Encapsulation is preferably conducted using a heated extruder or expander. The encapsulating agent may be a high protein vegetable composition, such as, wheat flour gluten, a grain flour or carbohydrate flour. The nutrients may be in particulate or liquid form and can be such things as vitamins, amino acids, lipids, enzymes, inorganic salts (minerals). Additives such as surfactants, can be incorporated into the admixture before the extruding step.

3,786,124
METHOD OF SINTERING FUSED SILICA CERAMIC FOR STRENGTHENING IT
Dennis R. Platts, Boalsburg, Pa., assignor to Ceramic Finishing Company, State College, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 785,670, Dec. 20, 1968. This application Feb. 8, 1971, Ser. No. 113,772
Int. Cl. C04b *35/14, 35/64, 41/02*
U.S. Cl. 264—65 **7 Claims**

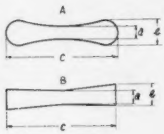
A method of sintering fused silica ceramic, especially slip cast fused silica, for improving the strength of the sintered fused silica ceramic. An unsintered preformed body of fused silica ceramic is subjected, during sintering, to vapor from a heat decomposable fluoride, preferably one taken from the group consisting of aluminum fluoride, cadmium fluoride and zinc fluoride, at a temperature of from 600°–900° C. for a period of time such that the portion of the body which is to have the strength improved is kept at the treating temperature for from 1–4 hours.

3,786,125

PROCESS FOR PRODUCING ACRYLIC SYNTHETIC FIBERS OF NONCIRCULAR CROSS-SECTION AND WITH IMPROVED SPARKLE

Keitaro Shimoda, Isamu Obama, and Takamaro Kusunose, Saidaiji, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Aug. 10, 1972, Ser. No. 279,625
Claims priority, application Japan, Aug. 12, 1971, 46/61,202
Int. Cl. B28h *28/54*
U.S. Cl. 264—177 F 3 Claims



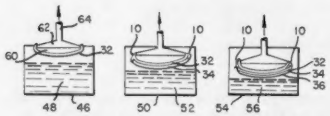
This invention relates to a process for producing acrylic synthetic fibers of a noncircular cross-section, improved in sparkle, from a spinning solution prepared by dissolving an acrylic polymer in an inorganic solvent. More particularly the present invention relates to a process for producing acrylic synthetic fibers of a noncircular cross-section improved in the sparkle by wet-spinning a spinning solution prepared by dissolving an acrylic polymer in an inorganic solvent, through a spinnerette made of a synthetic resin and having a particular spinning orifice shape and thermal conductivity, while maintaining a predetermined jet stretching ratio.

3,786,126

METHOD FOR MAKING A DISPOSABLE FACE RESPIRATOR

George Paul Reimschussel, Flemington, N.J., and Jacob Matthys Prins, Sinking Spring, Pa., assignors to Johns-Manville Corporation, New York, N.Y.

Original application Mar. 4, 1971, Ser. No. 121,086, now Patent No. 3,688,768. Divided and this application July 24, 1972, Ser. No. 274,366
Int. Cl. B28b *1/26*
U.S. Cl. 264—87 7 Claims



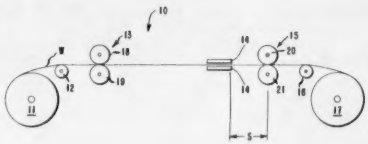
A process of simultaneously forming and attaching the filter meduim to the face piece is also disclosed. The process comprises depositing a first thin layer of solids from an aqueous slurry onto a foraminous suction mold having the surface contours desired for the interior of the filter medium, placing a face piece having an integrally formed apertured lip over the mold and the first layer, depositing a second thin fibrous layer of solids from an aqueous slurry on the outside surface of the first layer, on the outside surface of the aperture lip and within the apertures in the lip. In a preferred process, two fibrous backing layers are provided in this manner and a fibrous filter layer is deposited from an aqueous slurry on the outside surface of the second fibrous backing layer and within an undercut area provided in the apertured lip. An additional fibrous protecting layer is preferably deposited on the outside surface of the filter layer from an aqueous slurry.

3,786,127

STRETCHING POLYETHYLENE TEREPHTHALATE FILM IN A SHORTENED SPAN

Robert G. Peet, Circleville, Ohio, and Henry O. Foster, Newark, Kenneth G. Paulsell, Wilmington, and Thomas H. Hogshead, Jr., Centerville, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 101,116, Dec. 23, 1970, which is a continuation of application Ser. No. 844,140, July 23, 1969, both now abandoned. This application Jan. 28, 1971, Ser. No. 110,683
Int. Cl. B29d *7/24*
U.S. Cl. 264—288 8 Claims



A method of stretching a web of thermoplastic polymeric film having thickness (i.e., gauge) variations therein. The web is heated to an elevated temperature by indirect (i.e., non-contacting) heating means and stretched as it moves between slow and fast steps of nip rolls. The elevated temperature to which the web is heated is between a minimum temperature and a maximum temperature determined, in part, by the stretching rate and substantially all of the stretching takes place in a shortened stretching span between the heating means and the fast set of nip rolls. The heating means is positioned closely adjacent the fast set of nip rolls, which fast rolls preferably quench the web below its glass transition temperature and define, with the heating means, the shortened stretching span.

Apparatus is provided for performing the above-described method.

3,786,128

PURIFICATION OF BERYLLIUM HYDRIDE

Jawad H. Murib, Stuart Schott, and Charles A. Bonecutter, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 316,532, Oct. 16, 1963. This application Sept. 30, 1968, Ser. No. 763,970
Int. Cl. C01f *3/00*
U.S. Cl. 423—122 6 Claims

Crude impure beryllium hydride is purified by reacting the hydride with a beryllium halide in the presence of a Lewis base to form a haloberyllium halide complex and disproportionating said complex.

3,786,129

METHOD OF MANUFACTURING FUSED MAGNESIA

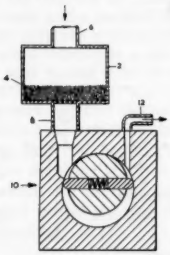
Tadashi Kawabe, Ako, Japan, assignor to Tateho Kagakukogyo Kabushiki Kaisha, Ako, Japan

No Drawing. Filed May 4, 1971, Ser. No. 140,271
Int. Cl. C01f *5/02*
U.S. Cl. 423—170 3 Claims

Fused magnesia of improved purity is manufactured from magnesia clinker by a method which comprises finely dividing magnesia clinker into a powder, treating

the powder with water or an aqueous alkaline solution to form magnesium hydroxide, drying the treated powder, intermixing the dried powder with untreated magnesia clinker, and melting the mixture in an electric furnace.

3,786,130
VACUUM APPARATUS
Malcolm Arthur Baker, Crawley, England, assignor to The British Oxygen Co. Ltd., London, England
Filed June 23, 1971, Ser. No. 156,123
Claims priority, application Great Britain, June 24, 1970, 30,663/70
Int. Cl. B01d *53/34;* **F04b** *37/02*
U.S. Cl. 423—245 **6 Claims**



Hydrocarbon molecules present in gas being evacuated from a housing by a pump, or leaking back into the housing from the pump, are permanently removed by passing the gas in intimate contact with a chemisorption agent at or above room temperature.

3,786,131
COMBATTING ARTHROPODS WITH PHENYLHYDRAZONES OF 1,2-DICARBONYL COMPOUNDS
Karl-Heinz Büchel and Wilfried Draber, Leverkusen, Ingeborg Hammann, Cologne, and Günter Untersten-höfer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Original application Sept. 24, 1968, Ser. No. 762,155, now Patent No. 3,641,098. Divided and this application Apr. 8, 1971, Ser. No. 132,542
Claims priority, application Germany, Sept. 26, 1967, P 16 68 025.4
Int. Cl. A01n *9/12, 9/20*
U.S. Cl. 424—304 **10 Claims**

α-(Halo, cyano, nitro and azido)-α-(alkanoyl, carboalkoxy [i.e. alkoxy carbonyl], amino and mono- and dialkyl amino)-carbonyl-(unsubstituted and mono to penta alkyl and/or electronegative substituent [e.g. halo, nitro, cyano, trifluoromethyl, trifluoromethyl-mercapto, -sulfonyl, and -sulfoxyl, alkoxy, alkyl sulfonyl and/or dimethylamino sulfonyl]-substituted) phenyl hydrazones and their corresponding alkali metal, alkaline earth metal and amine salts, which possess pesticidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

3,786,132
METHOD FOR PREPARING CARBONYLS OF RUTHENIUM AND OSMIUM
John L. Dawes and Jerry D. Holmes, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 11, 1972, Ser. No. 270,758
Int. Cl. C01g *1/04, 55/00*
U.S. Cl. 423—417 **17 Claims**

Carbonyls of the formula $M_3(CO)_{12}$, where M is ruthenium or osmium, are prepared by reacting a solution of a halide (such as a chloride, bromide, or iodide), a halide derivative, or a carbonyl halide of ruthenium or osmium in a first solvent with carbon monoxide at a temperature of from about 100° C. to about 150° C. at atmospheric pressure until a carbonyl halide complex is formed. A second solvent is then added in sufficient quantity to lower the boiling point of the resultant solution to less than 100° C. A quantity of zinc is added and the system is reacted with additional carbon monoxide at a temperature less than 100° C. until precipitation of the desired dodecacarbonyl is substantially complete. Each of the two solvents should preferably have the following properties.

(1) Act as a solvent for the starting halide of ruthenium or osmium;
(2) Not enter into the reaction; and
(3) Not act as a solvent for the dodecacarbonyl product.

In addition the first solvent should boil at a temperature between 100° C. and 150° C., and the second solvent should boil at a temperature of less than 100° C.

3,786,133
TITANIUM CARBIDE PREPARATION
Shiu-Tang Chiu, St. Lambert, Quebec, Canada, assignor to Quebec Iron & Titanium Corporation Fer et Titane du Quebec, Inc., Sorel, Quebec, Canada
No Drawing. Filed Sept. 11, 1970, Ser. No. 71,352
Int. Cl. C01b *31/30*
U.S. Cl. 423—440 **5 Claims**

Preparation of TiC from impure titanium oxide containing starting materials by using a carbiding process involving a catalyzer, a binder, a controlled heating speed and temperature, whereby pure titanium carbide grains having high combined carbon and low free carbon contents are obtained as one phase and a metallic matrix surrounding the titanium carbide as another phase. The metallic matrix is readily removed from the two phase body by leaching, thereby recovering the pure titanium carbide.

3,786,134
PROCESS FOR PRODUCING HOLLOW CARBON MICROSPHERES
Yasuo Amagi, Zenya Shiiki, Yukihiko Ohsumi, and Kazuo Noguchi, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed May 27, 1971, Ser. No. 147,712
Claims priority, application Japan, May 29, 1970, 45/45,625
Int. Cl. C01b *31/02*
U.S. Cl. 423—449 **14 Claims**

Hollow microspheres of carbon are obtained by homogeneously mixing a hard, highly aromatic pitch having a softening point of 60–350° C., a 0–25% nitrobenzene-insoluble moiety and a H/C ratio of 0.2–1.0 with an organic solvent having a low boiling point and being compatible with the pitch, dispersing the mixture into water in the presence of a protective colloid, adjusting the content of the solvent in the resulting microspheres to 0.2–10%, and then flash-heating said microspheres whereby the solvent therein functions as blowing agent to form hollow pitch microspheres.

Subsequently, the hollow microspheres of pitch are rendered infusible by heating them with an oxidizing fluid, gas or liquid, and baked to carbonization at a temperature of 600–2000° C. in an inert atmosphere. The resulting microspheres of carbon are excellently resistant to heat, chemicals and radioactive rays and are thus suitable as high-temperature heat-insulators, warming material, structural material for atomic piles, composite materials with metals, inorganics and plastics.

3,786,135

RECOVERY OF SOLID SELECTIVELY CONSTITUTED HIGH PURITY ALUMINUM CHLORIDE FROM HOT GASEOUS EFFLUENT

Larry K. King and Lester L. Knapp, Maryville, Tenn., Ronald C. Schoener, Lower Burrell, Pa., Nicholas Kloap, Benton, Ark., Bernard M. Starner, Rockdale, Tex., and John A. Remper, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 14, 1971, Ser. No. 180,276
Int. Cl. C01f 7/58, 7/60, 7/61
U.S. Cl. 423—496 9 Claims

Recovery of selectively constituted high purity aluminum chloride from the gaseous effluent of the chlorination of sodium contaminated alumina including the steps of purifying such gaseous effluent to provide essentially contaminant-free aluminum chloride in gaseous form in a gaseous carrier through selectively cooling the hot gaseous effluent to a first temperature range well above the ambient condition condensation temperature of aluminum chloride yet sufficient to condense a selective portion of the condensable constituents therein including a substantial portion of the sodium aluminum chloride values therein without condensing appreciable amounts of aluminum chloride, initially separating from the cooled gaseous effluent entrained particles and initially condensed constituents, further reducing the temperature of the residual cooled gaseous effluent from the first stage separation to a second predetermined lower temperature range still above the condensation temperature of aluminum chloride to effect a further selective condensation and separation of the remaining condensable constituents therein, and directly desubliming the essentially contaminant-free gaseous aluminum chloride values from the purified residual gaseous effluent to selectively constituted solid form in a fluidized bed of solid particles of aluminum chloride at controlled temperatures.

3,786,136

METHODS OF REMOVING SULFUR FROM THE EXHAUST GASES OF FIRED FUELS CONTAINING SULFUR AND OF SIMULTANEOUSLY EXPLOITING THE SULFUR FOR THE PREPARATION OF SULFURIC ACID

Tord Valter Yngve Axeborg, 360 75, Alstermo, Sweden

No Drawing. Filed July 15, 1971, Ser. No. 165,783
Int. Cl. C01b 17/72
U.S. Cl. 423—522 8 Claims

Ammonium nitrate and at least one of the compounds potassium nitrate and sodium nitrate are introduced into the exhaust gases from a furnace fired with fuels containing sulfur, and the exhaust gases are mixed with steam in a reaction chamber whereupon the exhaust gases are cooled and the forming sulfuric acid solution is collected.

3,786,137

PREPARATION OF ULTRA-PURE COMPOUNDS CORRESPONDING TO THE FORMULA $CaAl_2O_4$ AND $MgAl_2C_4$

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc.

No Drawing. Continuation of abandoned application Ser. No. 40,721, May 26, 1970. This application Apr. 7, 1972, Ser. No. 242,260
Int. Cl. C01f 7/16
U.S. Cl. 423—600 5 Claims

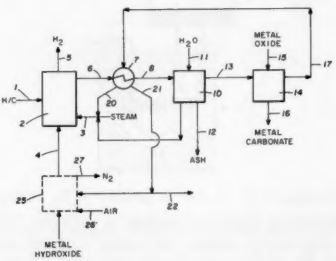
Double metal alkoxides of the formula $M[Al(OR)_4]_2$ are converted by pyrolysis, or hydrolysis and pyrolysis, to ultra-pure compounds corresponding to the formula MaI_2O_4 wherein M is magnesium or calcium and R is an alkyl group containing from 1 to 7 carbon atoms.

3,786,138

HYDROGEN GENERATION

Harold Shalit, Drexel Hill, and Edward S. J. Tomezsko, Media, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,046
Int. Cl. C01b 1/02, 1/26
U.S. Cl. 423—648 8 Claims



A method for forming hydrogen by reacting a carbonaceous material with steam in the presence of a molten alkali metal hydroxide, the carbon dioxide formed reacting with the alkali metal hydroxide to form an alkali metal carbonate, the reaction being carried out at least at the melting point of the alkali metal hydroxide and the alkali metal hydroxide being supplied in an amount at least sufficient to react with substantially all the carbon dioxide formed during the reaction.

3,786,139

HYDROGEN GAS GENERATING COMPOSITION AND METHOD FOR THE SAME

Gerald L. MacKenzie, Port Tobacco, and Paul R. Mosher, Indian Head, Md., assignors to the United States of America as represented by the Secretary of the Navy

Original application Feb. 25, 1970, Ser. No. 17,994, now Patent No. 3,674,702. Divided and this application Apr. 26, 1972, Ser. No. 247,904
Int. Cl. C01b 1/02, 1/05
U.S. Cl. 423—657 12 Claims

Compositions of a metal hydride, such as lithium hydride, aluminum metal and an elastomer binder, such as butyl rubber, which generate hydrogen gas upon being dispersed in water.

ERRATUM

For Class 424—304 see:
Patent No. 3,786,131

3,786,140

DIAGNOSTIC COMPOSITION AND A METHOD OF IN-VIVO DETERMINATION OF THE FUNCTION OF THE HUMAN PANCREAS

Jürgen Meyer-Bertenrath, Hanau, Hans Kaffarnik, Marburg, Hans-Georg Rey, Mannheim-Waldhof, Gerhard Michal, Tutzing, Upper Bavaria, and Ernst-Werner Busch, Lampertheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,425
Claims priority, application Germany, Sept. 10, 1969, P 19 45 663.4
Int. Cl. C07d *7/42*; C09k *3/00*; G01n *31/00*
U.S. Cl. 424—7 8 Claims

There are provided a diagnostic composition for the determination of the activity of pancreatic enzymes in the living human body and a method for carrying out this examination of the exocrine pancreas function. This new diagnostic composition comprises a monoester of fluorescein with a fatty acid having 8 to 16 carbon atoms in a pharmaceutical carrier. This new method for examining the exocrine pancreas function is carried out in that a predetermined amount of a fluorescein fatty acid monoester is introduced into and passed through the gastrointestinal tract, then the urine is collected or a portion of blood serum is withdrawn and the amount of released fluorescein contained in the urine or the blood serum is determined analytically.

3,786,141

METHOD OF PRODUCTION OF ANTI-TUMOR SUBSTANCES

Haruki Ogawa, Fuchu, Akihiro Yamamoto, Higashimurayama, Yutaka Sugawara, Iruma-gun, and Shigeo Suzuki and Yoshio Takagaki, Kodaira, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,112
Claims priority, application Japan, Sept. 30, 1970, 45/85,006
Int. Cl. A01n *15/00*
U.S. Cl. 424—95 10 Claims

A water-insoluble anti-tumor active substance is prepared from the living cells of hemolytic streptococci by lysing the cells of hemolytic streptococci with a lytic enzyme and collecting a water-insoluble fraction which corresponds to a protoplast membrane fraction of the cells. The preparation of the anti-tumor substance is far superior in the anti-tumor activity to that of water-soluble fraction and has less inflammation-, fever- and pain-causing properties than any ones of prior art.

3,786,142

ANTIBIOTIC ENDURACIDIN AND PROCESS FOR THE PRODUCTION THEREOF

Motoo Shibata, Toyonaka, Eiji Higashide, Takarazuka, Kazunori Hatano and Komei Mizuno, Suita, Mitsuko Asai, Takatsuki, and Masayuki Muroi, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of abandoned application Ser. No. 586,483, Oct. 13, 1966. This application Oct. 15, 1969, Ser. No. 866,636
Claims priority, application Japan, Oct. 13, 1965, 40/62,849; Oct. 26, 1965, 40/65,884
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 5 Claims

Enduracidin (prepared from a strain of Streptomyces in a nutrient medium) and Enduracidin hydrochloride are antibiotics useful in combating septic conditions in vitro and certain pathological disorders in vivo. Enduracidin exhibits strong antimicrobial activity against Gram-positive bacteria and acid fast bacteria.

3,786,143

METHOD FOR TREATING VIRUS INFECTION AFFECTING THE BRAIN

Hans Rudolf Corrodi, Askim, Nils Erik Oskar Lycke, Frolunda, and Björn-Erik Roos, Goteborg, Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,024
Claims priority, application Sweden, Dec. 23, 1968, 17,745/68
Int. Cl. A61k *27/00*
U.S. Cl. 424—309 3 Claims

Method for treating viral disease caused by herpes simplex virus, rabies virus, meningitis virus, or poliomyelitis virus which comprises administering a therapeutically effective dose containing at least one inhibitor of the biosynthesis of the monoamines noradrenaline, dopamine or 5-hydroxytryptamine.

3,786,144

1-POLYFLUOROALKYL BENZODIAZEPINES TO TREAT ANXIETY

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Original application Feb. 13, 1970, Ser. No. 11,336, now Patent No. 3,723,414. Divided and this application Dec. 8, 1972, Ser. No. 313,219
Int. Cl. A61k *27/00*
U.S. Cl. 424—244 12 Claims

Disclosed herein are 1-(polyfluoroalkyl)-2,3-dihydro-5-aryl-1H-1,4-benzodiazepines and compounds useful as intermediates for preparing these benzodiazepines. These benzodiazepines are particularly useful as anti-anxiety agents.

3,786,145

11-BASICALLY SUBSTITUTED DIBENZ[b,f][1,4] OXAZEPINE COMPOSITIONS FOR TREATING EMESIS

Jean Schmutz, Muri, and Fritz Hunziker and Franz Martin Kunzle, Bern, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 55,603, July 16, 1970, which is a continuation-in-part of application Ser. No. 797,281, Feb. 6, 1969, now Patent No. 3,546,226, dated Dec. 8, 1970, which in turn is a continuation-in-part of abandoned applications Ser. No. 371,123, May 28, 1964, and Ser. No. 712,956, Mar. 14, 1968. This application Dec. 29, 1971, Ser. No. 213,710
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 11 Claims

Pharmaceutical compositions containing 11-basically substituted dibenz[b,f][1,4]oxazepines or their pharmaceutically acceptable acid addition salts are useful in the treatment of emesis.

3,786,146

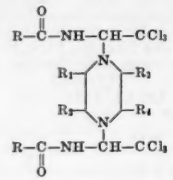
FUNGICIDAL COMPOSITIONS COMPRISING N,N'-BIS-[(1 - AMINO - 2,2,2 - TRICHLORO)-ETHYL]-PIPERAZINES

Walter Ost, Klaus Thomas, and Dietrich Jerchel, Ingelheim am Rhein, and Karl-Richard Appel, Biberach-Rissegg, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Application Nov. 4, 1970, Ser. No. 87,015, now Patent No. 3,696,106, dated Oct. 3, 1972, which is a continuation-in-part of application Ser. No. 793,187, Jan. 22, 1969, now Patent No. 3,595,916, dated July 27, 1971. Divided and this application July 13, 1972, Ser. No. 271,365
Claims priority, application Austria, Jan. 23, 1968, A 674/68; May 17, 1968, A 4,795/68
Int. Cl. A01n *9/22*
U.S. Cl. 424—250 8 Claims

Fungicidal compositions comprising an inert liquid or comminuted solid carrier and an effective fungicidal

amount of a compound of the formula



wherein

R is hydrogen or alkyl of 1 to 4 carbon atoms which may have from one to three halogen atoms attached thereto,

R_1 is hydrogen, alkyl of 1 to 3 carbon atoms or phenyl,

R_2 hydrogen, methyl or ethyl, and

R_3 and R_4 are each hydrogen or methyl;

and a fungicidal method using such compounds.

3,786,147

METHOD OF CONTROLLING POULTRY COCCIDIOSIS

Masatoshi Nagawa, Yoshio Suzuki, Katsuaki Matsui, and Yoshiyasu Tsurusaki, Tokyo, and Masaoki Iijima, Matsudo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Continuation of application Ser. No. 859,478, Sept. 18, 1969, which is a continuation of application Ser. No. 575,241, Aug. 26, 1966, both now abandoned. This application Apr. 27, 1971, Ser. No. 138,005

Claims priority, application Japan, Sept. 2, 1965, 40/53,778; Nov. 10, 1965, 40/68,501; June 30, 1966, 41/42,102

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **2 Claims**

Poultry coccidiosis is combatted by administering to poultry an anticoccidial amount of

3 - (2 - methyl-4-amino-5-pyrimidinyl)methyl-4-methyl-5-(2-chloroethyl)thiazolium chloride hydrochloride

or

3 - (2 - methyl-4-amino-5-pyrimidinyl)-methyl-4-methyl-5 - (2 - chloroethyl)thiazolium naphthalene 1,5-disulfonate.

0.004–0.6% by weight of the respective compound is incorporated in poultry feed for obtaining the best results.

3,786,148

METHOD OF TREATING HYPERTENSION WITH MORPHANTHRIDINES

Richard Dage, Brown Deer, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 49,502, June 24, 1970, now Patent No. 3,692,906. This application Aug. 3, 1972, Ser. No. 277,527

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **3 Claims**

The inventive method comprises administering a morphanthridine to a hypertensive animal to effect a lowering of blood pressure. Representative of the compounds that can be used in the method are 2-chloro-11-(3-dimethylaminopropylidene)-morphanthridine and 11-(1-methyl-4-piperidylene)-morphanthridine.

3,786,149

ANIMAL FEED FOR OBTAINING INCREASED PRODUCTION IN ANIMALS

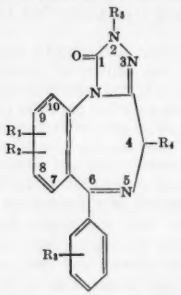
Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,329

Int. Cl. A61k *27/00*

U.S. Cl. 424—269 **6 Claims**

An animal feed comprising a compound of the group consisting of 2,4-dihydro-6-phenyl-1H-s-triazolo[4,3-a][1,4]benzodiazepin-1-ones of the formula:



Formula 1

wherein R_1, R_2, and R_3 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and wherein R_4 and R_5 are selected from the group consisting of hydrogen and alkyl as defined above and including the pharmacologically acceptable acid addition salts and N–5 oxide in combination with a nutrient feed. A process for obtaining increased productivity in meat-producing, milk-producing and egg-laying animals by feeding the aforementioned compound in combination with nutrient feeds.

3,786,150

FUNGICIDAL USE OF CERTAIN BENZ[d]ISOTHIAZOLES

Fui-Tseng H. Lee and Gert P. Volpp, Princeton, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,674

Int. Cl. A01n *9/12*

U.S. Cl. 424—270 **1 Claim**

3,6-dichloro - 7 - nitrobenz[d]isothiazole, useful as a fungicide, is described. The preparation of the compound and fungicidal formulations containing it are also described.

3,786,151

METHODS OF COMBATTING BACTERIA OR FUNGI USING 3-METHYL-4,4-DICHLORO-5-PYRAZOLONE

Pierre Girault, Paris, and Guy Hagemann, Nogent-sur-Marne, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,272

Claims priority, application France, Aug. 17, 1970, 30,177

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **2 Claims**

Biocidal 3-methyl 4,4-dichloro 5-pyrazolone, biocidal mineral or organic salts thereof, biocidal compositions containing 3-methyl 4,4-dichloro 5-pyrazolone or its mineral or organic salts, a method for controlling bacteria and a method for controlling bacteria and fungi.

3,786,152

SURFACE-COATING COMPOSITIONS CONTAINING N' - TRICHLOROMETHYLMERCAPTO-INDAZOLES

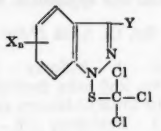
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050. This application Nov. 6, 1970, Ser. No. 87,615

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 14 Claims

Compounds that have the structural formula



wherein X represents nitro, amino (halogenated benzylidene)amino, or halogen, Y represents hydrogen or halogen, and *n* is a number in the range of zero to 2 are used to protect surface-coating compositions from deterioration resulting from attack by fungi and other microorganisms.

3,786,153

CONTROL OF VAMPIRE BATS

Roy D. Thompson and Charles P. Breidenstein, Lakewood, Colo., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,168

Int. Cl. A01n *9/24, 9/28*

U.S. Cl. 424—281 4 Claims

Population reduction of vampire bats is accomplished by means of a toxicant administered systemically to host animals, particularly cattle. The toxicant is administered in an amount that is harmless to the host animal but is lethal to vampires that feed on the blood of the host.

3,786,154

COMPOSITIONS AND METHOD EMPLOYING 1-[4-HYDROXY - 3'-(HYDROXYMETHYL)-PHENYL]-1-HYDROXY-2-ARALKYLAMINOETHANES

John T. Suh, Mequon, and Thomas M. Bare, Milwaukee, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 150,220, June 4, 1971, now Patent No. 3,700,692. This application Oct. 19, 1972, Ser. No. 298,841

Int. Cl. A61k *27/00*

U.S. Cl. 424—282 6 Claims

Pharmaceutical compositions containing α^1-[[(α-methyl - 3,4 - methylenedioxyphenethyl)amino] - methyl]-4-hydroxy-m-xylene-α^1,α^3-diol are useful in producing bronchodilation in animals.

3,786,155

SULFUR CONTAINING FUNGICIDAL COMPOSITIONS AND METHODS OF USE

Gilbert Cousserans, Portet-sur-Garonne, and Francois Mathey, Robert Scuflaire, and Oleg Gryszkiewic-Trochimowski, Ballancourt, France, assignors to Azote et Produits Chimiques S.A., Toulouse, France

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,600

Claims priority, application France, Sept. 8, 1969, 6930409

Int. Cl. A01n *9/12*

U.S. Cl. 424—301 8 Claims

Compositions comprising as an active ingredient a compound of the formula

$$(\text{iso-}C_3H_7)O—COS—(CH_2)_n—SOC—O(\text{iso-}C_3H_7)$$

wherein *n* is 0 or 1 are useful in the prevention or cure of fungal infections, e.g., *Botrytis cinerea,* in plants and for combatting noxious insects, e.g., flies, cockroaches and ants.

3,786,156

METHOD OF TREATING HYPERGLYCEMIA

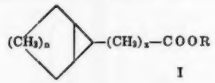
Ronald H. Rynbrandt and Elisabeth S. Cerda, Portage, and Fredericka L. Schmidt, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 106,601, Jan. 14, 1971. This application Aug. 3, 1972, Ser. No. 277,575

Int. Cl. A61k *27/00*

U.S. Cl. 424—305 7 Claims

A method of treating hyperglycemia and more specifically diabetes mellitus in mammals e.g. dogs, cats, horses, and humans, with a unit dosage form of exo-bicycloalkane carboxylic acids and esters thereof of the Formula I:



I

wherein *n* has the value of 1 to 3, inclusive, wherein *x* is zero or 1; and wherein R is selected from the group consisting of hydrogen, methyl and ethyl.

3,786,157

METHOD OF TREATING HYPERGLYCEMIA

Ronald H. Rynbrandt, Portage, and Fredericka L. Schmidt, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 106,590, Jan. 14, 1971. This application Aug. 3, 1972, Ser. No. 277,574

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 3 Claims

A method of treating hyperglycemia and more specifically diabetes mellitus in mammals e.g. dogs, cats, horses, and humans, with a unit dosage form of exo-tricycloalkane-anti-carboxylic acid and esters of the Formula I:

3,786,158

SUBSTITUTED O-CARBAMYLHYDROXAMATE INSECTICIDES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Apr. 2, 1970, Ser. No. 32,410, now Patent No. 3,639,633, which is a continuation-in-part of application Ser. No. 670,494, Aug. 31, 1967, now Patent No. 3,576,834, which is a continuation-in-part of application Ser. No. 602,134, Dec. 16, 1966, which in turn is a continuation-in-part of application Ser. No. 361,277, Apr. 20, 1964, both now abandoned. Divided and this application Sept. 9, 1971, Ser. No. 179,235

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—327 4 Claims

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamylthiolacetohydroxamate are useful in

controlling insects, other arthropod pests and pestiferous mollusks.

ERRATUM

For Class 424—263 see:
Patent No. 3,786,160

3,786,159

PROCESS OF MANUFACTURING ALCOHOL-CONTAINING SOLID MATTER

Jinichi Sato, Nagoya, and Tosiro Kurusu, Niwa-gun, Japan, assignors to Sato Shokuhin Kogyo Kabushiki Kaisha, Komaki-shi, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,659
Claims priority, application Japan, Dec. 18, 1970, 45/114,585
Int. Cl. A23l *1/04*
U.S. Cl. 426—302 **8 Claims**

A solution of alcohol, water and a water-soluble product is formed, the water-soluble product being present in an amount more than 70% by weight of the water and more than 100% by weight of the alcohol. The solution is spray-dried at the lowest possible temperature to obtain a powder product in which the water is substantially removed and the alcohol is contained within a coating of the water-soluble product.

3,786,160

USE OF 2-HYDROXYMETHYL-3-HYDROXY-6-(1-HYDROXY - 2-AMINOETHYL)-PYRIDINES AS BRONCHODILATORS

Wayne E. Barth, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,878, now Patent No. 3,700,681, dated Oct. 24, 1972. Divided and this application May 25, 1972, Ser. No. 256,756
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 **10 Claims**

2-hydroxymethyl - 3 - hydroxy - 6 - (1-hydroxy-2-aminoethyl)pyridines and salts thereof, a novel class of β-adrenergic agonist bronchodilators in mammals, and 2-hydroxymethyl - 3 - benzyloxy - 6 - pyridinecarboxaldehyde, a valuable intermediate in the preparation of the subject compounds.

ELECTRICAL

3,786,161
PROCESS AND APPARATUS FOR MONITORING AND CONTROL OF METALLURGICAL FURNACES

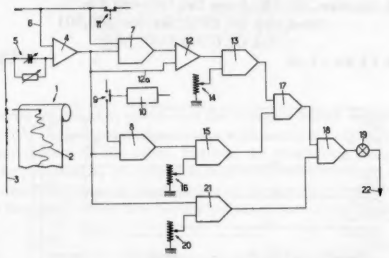
Guy Sartorius, Bau-Saint-Martin, France, assignor to Societe Des Aciers Fins De L'Est, Paris, France

Filed July 6, 1973, Ser. No. 376,985

Claims priority, application France, July 11, 1972, 7225154

Int. Cl. F27d *11/10*

U.S. Cl. 13—12 10 Claims



A process and apparatus for the monitoring and control of the heating conditions of a metallurgical furnace. The inside surface temperature of the furnace walls is continuously measured and after the temperature reaches a predetermined minimum, the temperature increase per unit time is also measured. When both the temperature increase per unit time and the temperature exceed predetermined minimum values an alarm is operated and control signals are inputted to control circuitry for decreasing the temperature by carrying the electrode current and by reducing the furnace voltage if varying the electrode current does not produce a desired reduction in the temperature increase per unit of time after a predetermined period.

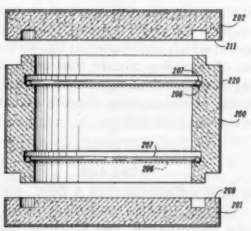
3,786,162
PORTABLE KILNS

Frank S. Colson, 1666 Hillview, Sarosota, Fla.

Filed Sept. 27, 1971, Ser. No. 184,122

Int. Cl. H05b *3/66*

U.S. Cl. 13—22 7 Claims



A relatively light weight portable kiln which may be quickly and easily disassembled, transported and reassembled. The kiln shown comprises: a cylindrical body, an optional body extender, a disk shaped base which engages the body, a similarly shaped lid, a metallic support frame and a controlled source of heat. The cylindrical body, the base and the lid are vacuum formed members composed of alumina-silica, zirconium or other similar fibrous material which is light weight, strong and capable of acting as an insulator and container of heat at temperatures in excess of 2,000°F. The body, the lid and the base are each covered with a stainless steel exterior surface to protect these elements from mechanical damage. The source of controlled heat shown comprises electric elements supported in retaining recesses in the wall of the cylindrical body.

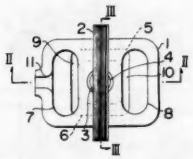
3,786,163
LOW-FREQUENCY INDUCTION FURNACE

Masahiro Kohama, Yokohama, Japan, assignor to Kokusai Tekko Kabushiki Kaisha, Yokohama-shi, Japan

Filed Feb. 20, 1973, Ser. No. 333,639

Int. Cl. H05b *5/12*

U.S. Cl. 13—29 4 Claims



A low-frequency induction furnace in which molten metal reservoirs are provided on both sides of a primary coil, both reservoirs communicating with each other at their bottom portions by means of two secondary grooves extending across the primary coil. The bottom portion of each molten metal reservoir is of a size such that its cross-sectional area in the direction transverse to the direction of energization by induced current is smaller than that of each secondary groove. The induced current is induced in the molten metal in the reservoirs by energy from the primary coil.

3,786,164
VACUUM OVEN FOR FIRING CERAMIC FACINGS

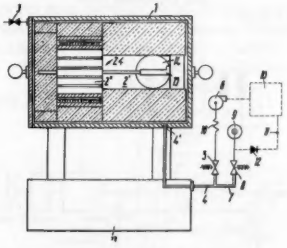
Karl Hintenberger, Krogerstr. 4, Frankfurt am Main, Germany

Filed Apr. 24, 1972, Ser. No. 246,641

Claims priority, application Germany, Apr. 22, 1971, P 21 19 563.1

Int. Cl. H05b *1/00*

U.S. Cl. 13—31 3 Claims



Ceramic facings are filed in a refractory lined oven having a pre-heating zone and a firing zone, the facings being charged into the pre-heating zone on a carriage which may be moved into the firing zone. The oven chamber may be selectively evacuated through a main conduit which connects the lower part of the oven housing to the intake of a vacuum pump or supplied with inert gas from a supply thereof. For this purpose, branch conduits lead from the vacuum pump and the inert gas

supply to the main conduit, and valves in the branch conduits may be selectively operated. A venting valve is mounted in the upper part of the oven housing for venting inert gas from the oven chamber.

3,786,165

PREHEATING METHOD FOR FURNACES

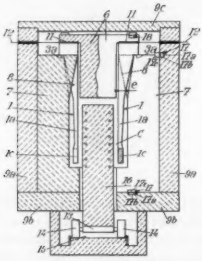
Anne-Marie Anthony nee Barbier, Meudon; Krzysztof Dembinski, Tigy; Michele Faucher nee Dupre, Fonteney Le Fleury, and Lucien Dupont, Vouzon, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Paris-Defense, France

Division of Ser. No. 91,847, Nov. 23, 1970. This application Nov. 30, 1972, Ser. No. 310,790

Claims priority, application France, Nov. 24, 1970, 7040379

Int. Cl. F27d *23/00*

U.S. Cl. 13—34 **2 Claims**



The furnace has *n* superposed rows of *m* heating elements suspended on supports, the assembly bounding a heating cavity in the form of a tunnel. The elements are U-shaped and suspended at the ends of their arms. At least some of these elements are heated to 2000° to 2200°C by a movable preheating element, supplemented by radiation from the initially preheated elements to the others progressively.

3,786,166

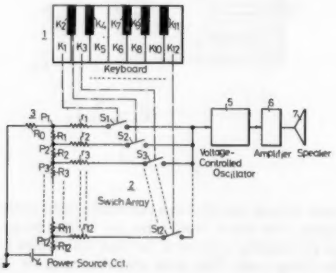
KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Fumio Mieda, Saitama, Japan, assignor to Keio Giken Kogiyo Kabushikikaishiya, Tokyo, Japan

Continuation of Ser. No. 121,831, March 8, 1971, abandoned. This application May 19, 1972, Ser. No. 255,299

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.01 **2 Claims**



A keyboard type electronic musical instrument, having a group of twelve keys per octave for playing the even tempered scale, is adapted to sound the quarter tone between two notes of the even tempered scale when the keys corresponding to said two notes are simultaneously operated. The instrument employs a voltage controlled oscillator, a voltage source having output voltages proportional to the frequencies of the notes of the scale, a group of key operated switches and series resistors for selectively connecting the oscillator to the voltage source. The resistors of operated switches form a voltage divider when two keys are simultaneously operated and a voltage equal to the average of the converted voltages is applied to the oscillator to produce the intermediate tone.

3,786,167

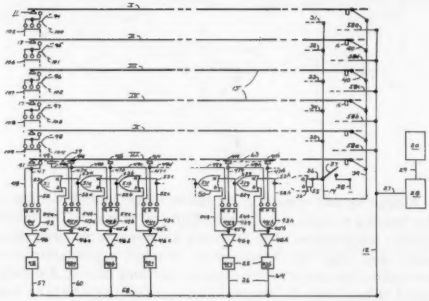
MUSICAL INSTRUMENTS

James J. Borell, 1318 W. Oak St., Kissimmee, Fla., and Arthur R. Bonham, 5614 LeJeune Dr., Orlando, Fla.

Filed Aug. 14, 1972, Ser. No. 280,501

Int. Cl. G10h *3/00, 5/00*

U.S. Cl. 84—1.16 **12 Claims**



Musical instruments playable in duet fashion by one player includes a stringed instrument with segmented frets. A control system for the other instrument includes a control circuit for each string and which has actuating circuits that are associated with the open and keyed string tones playable on the string. The actuating circuits associated with the second and higher string keying positions are enabled by simultaneous string contact with adjacent fret sections, and simultaneous string contact with a plate and fret segment at the first position serves to enable the actuating circuit associated with the first string keying position. A disabling circuit has components associated with each actuating circuit and which disable the associated actuating circuit in response to output signals of the actuating circuits associated with the higher keying positions. Open tone sensing circuits are avoided in one embodiment especially designed for chord playing players of the stringed instrument and in which simultaneous signals from a predetermined number of disabling circuits that are enabled by simultaneous keying of different strings serve to control an auxiliary circuit to enable the actuating circuits associated with the open tones of the unkeyed strings.

3,786,168

HOLDER MEMBER FOR A DISC-SHAPED SEMICONDUCTOR ELEMENT

Andre Jaecklin, Ennetbaden, and Siegfried Strassler, Wettingen, both of Switzerland, assignors to Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Mar. 6, 1972, Ser. No. 231,959

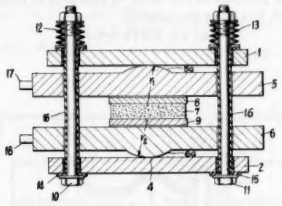
Claims priority, application Switzerland, Mar. 11, 1971, 3691/71

Int. Cl. H05k *7/20*

U.S. Cl. 174—15 R **3 Claims**

A holder member for a disc-shaped semiconductor element includes a pair of spaced support plates each resiliently biased

against one of a pair of pressure plates which are sandwiched between them. The semiconductor element is held between the pressure plates. The contacting surfaces between the support plates and the pressure plates each has a different radius of curvature. Various embodiments of the contacting surfaces



between the support plates and the pressure plates include a convexly shaped projection on one with a convex, concave or planar surface on the other. Further, the contacting surfaces can be provided by intermediate members positioned between the oppositely facing plates and with the intermediate members having a convex or spherically shaped contacting surface.

3,786,169

INSULATION GAS FILLED ENCAPSULATED HIGH VOLTAGE ELECTRICAL CONDUCTOR

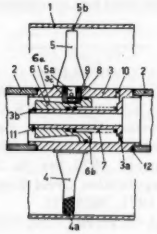
Dieter Floessel, Fislisbach, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed July 12, 1972, Ser. No. 271,002

Claims priority, application Switzerland, Sept. 20, 1971, 13598/71. The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.

Int. Cl. H01b *9/04*

U.S. Cl. 174—28 **10 Claims**



A high-voltage tubular electrical conductor is encapsulated within a pressurized insulation gas filled rectilinear tubular casing and supported centrally within the casing by longitudinally spaced support-insulators each of which is provided with three legs spaced 120° apart about the conductor. Two of the legs are fixedly secured to the conductor structure and include rolling means in the form of balls at their outer ends to facilitate abrasion-free insertion of the conductor-support insulator assembly within the casing. The third leg is supported by the tubular conductor for movement in a radial direction by a pneumatic drive mechanism to enable the leg to be moved from a radially inward position establishing an initial clearance with the wall of the casing during insertion of the conductor and support insulator assembly to a radially outward position establishing a spring-loaded elastic pressure contact with the casing wall thereby to secure the support-insulator in position against longitudinal displacement. The pneumatic drive mechanism for the radially displaceable leg is constituted by a piston located within the conductor, the piston being actuated by introduction of the pressurized insulating gas into the conductor and casing and including a tapered surface portion which forces the leg radially outward.

3,786,170

INSULATION GAS FILLED ENCAPSULATED HIGH VOLTAGE ELECTRICAL CONDUCTOR

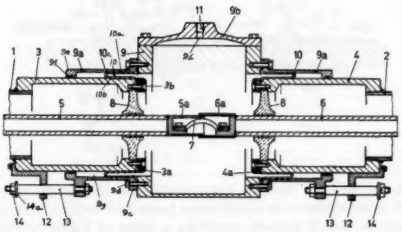
Dieter Floessel, Fislisbach, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed July 12, 1972, Ser. No. 271,003

Claims priority, application Switzerland, Sept. 8, 1971, 13097/71; Sept. 24, 1971, 13994/71

Int. Cl. H01b *9/01*

U.S. Cl. 174—28 **10 Claims**



An encapsulated high-voltage conductor structure in which the conductor is supported centrally within a grounded tubular casing by means of insulators, the casing being filled with a pressurized insulating gas and being divided in sections which are coupled together in essentially end-to-end relation by means of coupling joints which provide compensation for temperature-induced expansion and contraction of the casing sections. Each coupling joint is provided by a housing including oppositely extending coupling sleeves into which the ends of adjoining casing sections are inserted for sliding, guiding movement as the sections expand or contract, there being interposed in an annular gap provided between the end of each casing section and the associated coupling sleeve a sealing means in the form of a flexible tube turned back upon itself which accommodates the relative longitudinal displacement between the casing section and its coupling sleeve.

3,786,171

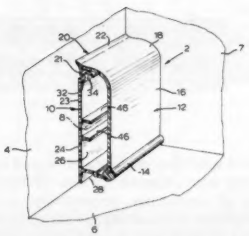
INTEGRAL HINGED WIRING RACEWAY

Jerry P. Shira, Toronto, Ontario, Canada, assignor to Kyoda Plastics Limited, Mississauga, Ontario, Canada

Filed Jan. 22, 1973, Ser. No. 325,936

Int. Cl. H02g *3/04*

U.S. Cl. 174—48 **7 Claims**



A surface mounting electrical wiring raceway having a back member adapted to be mounted on a wall, and a front cover.

The front cover is hingeably connected to the back member adjacent to one lateral edge thereof, and releaseably coupled to the back member adjacent to the opposite lateral edge. The raceway is of single unit construction and requires no alignment if installed adjacent to a floor or ceiling.

3,786,172

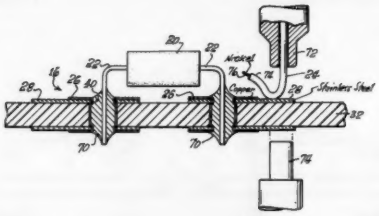
PRINTED CIRCUIT BOARD METHOD AND APPARATUS

Larry R. Conley, Fountain Valley, Calif., assignor to Accra-Point Arrays Corporation, Santa Ana, Calif.

Filed Dec. 7, 1972, Ser. No. 311,738

Int. Cl. H05b *1/18*

U.S. Cl. 174—68.5 **4 Claims**



A method for the low cost production of printed circuits with both soldered-in component leads and welded wire connections, which includes applying a sheet of highly weldable material such as stainless steel to an insulative board, plating a layer of highly solderable material such as copper over the stainless steel, applying a first resist pattern and then a first etchant such as ferric chloride that etches both copper and stainless steel to form a predetermined printed circuit pattern, and then applying a second resist pattern and a second etchant such as chromic acid which etches only the copper to leave exposed regions of the stainless steel. Components can be wave soldered in place, and the solder will not adhere to the stainless steel so that wires can later be welded to the exposed stainless steel weld regions. More uniform welding can be obtained by applying an underlayer of copper to the insulative substrate under the stainless steel layer, so that there is a low resistance path to all weld regions.

3,786,173

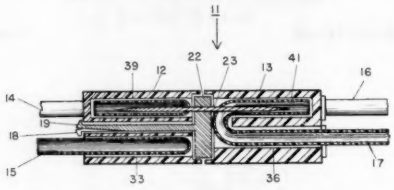
ELECTRICAL SPLICE

Kuno J. Vogt, 5854 Kantor Ct., San Diego, Calif.

Filed Jan. 31, 1972, Ser. No. 221,913

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 S **3 Claims**



An electrical splice having first and second mating identical insulative parts with channels therein for receiving first and second pairs of conductors, respectively, and an insulative center member with first and second shorting pins disposed on opposite sides of first and second guide locking members which cooperate with guide slots in the first and second identical parts for receiving the guide locking members.

3,786,174

INSULATION GAS FILLED ENCAPSULATED HIGH VOLTAGE ELECTRICAL CONDUCTOR

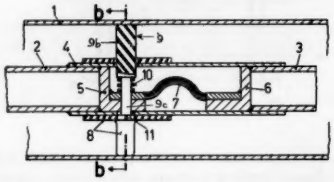
Dieter Floessel, Fislisbach, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed July 18, 1972, Ser. No. 272,875

Claims priority, application Switzerland, Sept. 13, 1971, 13295/71. The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.

Int. Cl. H01b *9/04*

U.S. Cl. 174—28 **4 Claims**



A high-voltage electrical conductor is encapsulated within an insulation gas filled rectilinear tubular casing and supported centrally within the casing by longitudinally spaced support-insulators each of which is provided with three radially directed legs spaced 120° apart about the conductor. Two of the legs have fixed positions on the insulator structure but the third leg is spring-loaded for movement in the radial direction from a retracted, latched position to a radially outward unlatched position. A carriage running on wheels or rolls is used to transport the insulator-conductor structure into the casing with the third leg in its retracted, latched position and with the outer ends of all three legs spaced from the casing wall so that no undesirable contact therebetween takes place during the transporting operation. When the insulator has reached the desired position of installation, the latch for the third leg is released causing this leg to move outward and press firmly against the casing wall accompanied by a like movement of the other two fixed legs into pressure contact with the casing wall.

3,786,175

ELECTRICAL INSULATOR HAVING SHEDS ARRANGED AT AN ANGLE TO ITS AXIS

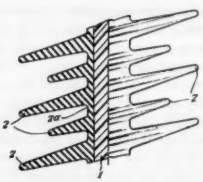
Frank Hanslow Proctor, Gloucester, England, assignor to Transmission Developments Limited, Gloucester, England

Filed Apr. 19, 1972, Ser. No. 245,434

Claims priority, application Great Britain, Apr. 27, 1971, 11701/71; Aug. 17, 1971, 38553/71

Int. Cl. H01b *17/50, 17/60*

U.S. Cl. 174—211 **4 Claims**



The invention describes a shedded insulator for supporting electric conductors particularly the conductors of overhead transmission lines. Instead of making the sheds normal to the axis of the insulator the sheds are arranged at an angle to a plane normal to the axis of the insulator. The sheds may be of the same or different diameters.

3,786,176
MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

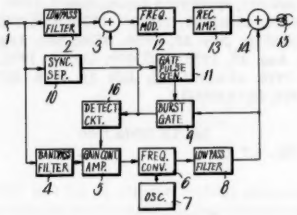
Hisaaki Narahara; Toshihiko Numakura, both of Tokyo, and Yoshimi Watanabe, Kanagawa-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1972. Ser. No. 305,986

Claims priority, application Japan, Nov. 19, 1971, 46/92801; Nov. 22, 1971, 46/93830

Int. Cl. H04n *5/78, 9/02*

U.S. Cl. 178—5.4 CD **17 Claims**



An improved system for magnetic recording and/or reproducing a color television signal including a luminance signal and a chrominance signal which contains a burst signal therein. Before recording the television signal, the chrominance signal is frequency-converted to a frequency band lower than its original one and the burst signal is extracted from the chrominance signal. The burst signal is then combined with the luminance signal to frequency-modulate a carrier signal having a predetermined frequency, then both the frequency-converted chrominance signal and the frequency-modulated signal are recorded on a magnetic medium. When the magnetic medium is played back, the frequency-converted chrominance signal is frequency-reconverted to the original frequency band by means of a reference signal the phase of which is controlled by the burst signal reproduced by frequency-demodulation so that phase erros of the reproduced chrominance signal are diminished.

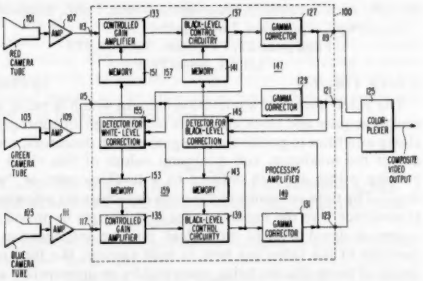
3,786,177
APPARATUS FOR AUTOMATIC COLOR BALANCING OF TELEVISION CAMERA SIGNALS

Lucas John Bazin, Stratford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 264,255

Int. Cl. H04n *9/08*

U.S. Cl. 178—5.4 BT **7 Claims**



First, second and third signal level comparators are used to compare against a predetermined signal level respective ones of the red, green and blue color signals generated by a television camera. The outputs of the comparators are combined in an AND gate to ascertain when an essentially black or essentially white signal obtains. When such signal is present, the differences between red and green color signals and between blue and green color signals are reduced by servomechanisms.

3,786,178
CIRCUIT FOR PRODUCING A THREE LINE SEQUENTIAL COLOR TELEVISION SIGNAL

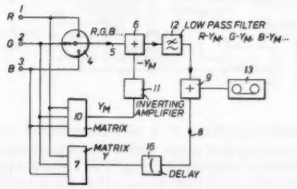
Werner Scholz, Gehrden, Germany, assignor to TED Bildplatten Aktiengesellschaft AEG-Telefunken . Teldec, Zug, Switzerland

Filed Dec. 6, 1972, Ser. No. 312,576

Claims priority, application Germany, Dec. 9, 1971, P 21 61 106.3

Int. Cl. H04n *1/22*

U.S. Cl. 178—5.4 CD **7 Claims**



A recording circuit for producing a three line sequential color television signal (TRIPAL) to be used with a playback circuit wherein the luminance signal is formed by combining the recorded chrominance signals in a matrix which differs from the standard luminance signal matrix, i.e., M-TRIPAL. In the recording circuit, a luminance signal Y_M is formed by combining the three color signals in a matrix which is the same as that to be used during playback and this luminance signal Y_M is subtracted from each of the color signals which have been sequentially sampled at horizontal picture line sweep frequency.

3,786,179
COLOR SUBCARRIER PHASE SHIFT CIRCUIT FOR COLOR TELEVISION RECEIVER

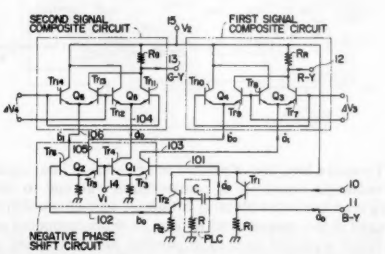
Katsuo Mouri, Yokohama, and Gentaro Miyazaki, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 29, 1971, Ser. No. 157,885

Claims priority, application Japan, June 29, 1970, 45/56747

Int. Cl. H04n *9/50*

U.S. Cl. 178—5.4 SD **16 Claims**



A B-Y color subcarrier $\dot{a}_o$ and a signal $\dot{b}_o$, the phase of which is shifted by a specific angle θ by a phase shift circuit, are supplied to first and second differential amplifiers, thereby to obtain signals $\dot{a}_1$ and $\dot{b}_1$ whose phases are reversed with respect to

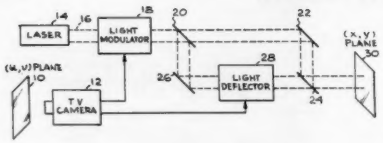
those of said input signals $\dot{a}_e$ and $\dot{b}_e$ and the signals $\dot{b}_o$ and a_1 are combined vector-wise by third and fourth differential amplifiers. The signal $\dot{b}_1$ and one of said signals $\dot{a}_e$ and $\dot{a}_1$ are then combined vector-wise by fifth and sixth differential amplifiers at the same time, so that an R-Y subcarrier signal and a G-Y subcarrier signal having specific phase angles 90° and −123° with respect to the color subcarrier signal $\dot{a}_e$ are formed.

3,786,180

FOURIER TRANSFORMING SYSTEM

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed July 31, 1972, Ser. No. 276,710
Int. Cl. H04n *9/54, 9/60*
U.S. Cl. 178—6.5 **13 Claims**



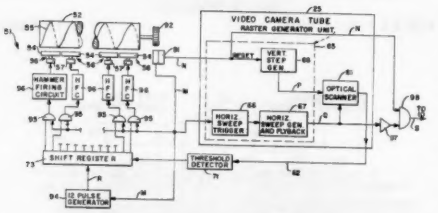
A Fourier transform of a two-dimensional scene may be made by viewing that scene with a television camera. The output of the scene modulates a source of coherent light, which is then divided into two light beams. One beam of coherent light is deflected by a light deflection system synchronously with the television camera, so that its angle of impingement on an integrating plane is varied accordingly. The undeflected light beam is also directed at the integrating plane where both light beams are integrated by either a photographic film or another television camera and thereby forms a Fourier transform of the scene. The film records the magnitude of the Fourier transform while the second television camera provides electrical signals representative thereof.

3,786,181

OPTICAL LINE SCANNER AND FACSIMILE SYSTEM

Charles B. Pear, Jr., Greenlawn, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,211
Int. Cl. H04n *3/00*
U.S. Cl. 178—6.8 **9 Claims**



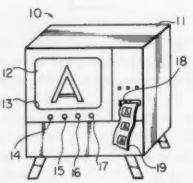
To scan a long line of printed information, a fiber-optic line-to-rectangle converter is configured at one end to divide a long scan line into a plurality of shorter segments which are arranged at the opposite end to form an array composed of consecutive segments stacked in parallel. Since the array covers an area instead of a line, a video camera tube scanning the array utilizes more of its useable face area thus improving image resolution for the converted line. To operate a helical bar printer having as many hammers as line segments in the converter, the rectangular image is scanned with a series of horizontal sweeps orthogonal to the line segments. With each sweep, the hammers are fired simultaneously in response to video signals indicative of the light level at corresponding positions in each line segment.

3,786,182

FRAME-BY-FRAME VIDEO IMAGE RECORDING APPARATUS

Masahiko Kaneko; Hiroshi Miyama, and Jun Nishida, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed June 7, 1971, Ser. No. 150,663
Claims priority, application Japan, June 9, 1970, 45/50084; July 17, 1970, 45/62981; July 17, 1970, 45/62982; July 22, 1970, 45/64531; July 23, 1970, 45/65300; Aug. 7, 1970, 45/69452; Aug. 19, 1970, 45/73079; Oct. 6, 1970, 45/88568; June 23, 1970, 45/62992 [U]; July 21, 1970, 45/73155 [U]; Oct. 15, 1970, 45/103093 [U]
Int. Cl. H04n *5/86*
U.S. Cl. 178—6.7 A **5 Claims**



A recording apparatus for recording a video image on a recording medium comprises a recording mechanism including a cathode-ray tube and pressure means for pressing the recording medium against a faceplate of the cathode-ray tube, and an electronic control means for controlling the recording mechanism. The control means includes a single-frame gate means adapted to be started by a start switch thereby energizing the cathode-ray tube to reproduce the video image on a desired single-frame, and feed means governed by the start switch for actuating a feeding element of the recording mechanism so as to effect timely feeding of the recording medium. This recording apparatus thus recording a video image signal frame-by-frame as above-described, the feeding rate of the recording medium need not be synchronized with the sweeping rate of a flying-spot on the faceplate.

3,786,183

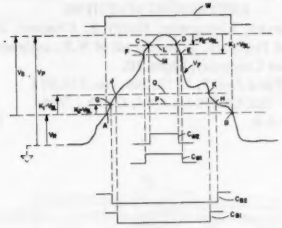
CONTRAST DETECTOR FOR VIDEO TRACKING SYSTEM

Richard Alan Satterfield, Huntington Beach, Calif., assignor to Northrup Corporation, Los Angeles, Calif.

Filed June 21, 1972, Ser. No. 264,975
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **10 Claims**

The video output of a television camera which is being utilized to acquire and track a target is fed through an appropriate clamp and filter to positive and negative peak detectors, which detect the maximum and minimum values of this video appearing within an area defined by a tracking gate or "window." The time constants of the peak detectors are adjusted in accordance with the expected area of the target to provide an optimum signal to noise ratio. Peak positive and negative excursions of the video are held in hold circuits, the time constants of these circuits being governed by an appropriate control signal which provides different time constants for the acquisition mode and for the tracking mode. The outputs of the hold circuits are subtracted from each other, the difference signal thus obtained indicating the spread between the

peak positive and negative excursions of the sampled video. This difference signal is multiplied by separate predetermined factors to provide separate signals, each of which is a different fraction of the spread signal. These signals are each separately algebraically summed with the signal representing the peak positive excursion and the signal representing the peak positive excursion and fed to separate voltage comparators for comparison with the clamped and filtered camera output. The output signals thus generated, which represent the width of the video signal at the various amplitudes represented by the multiplying factors, are fed to tracking logical control for utilization in controlling the slewing of the TV camera.



3,786,184

FOCUSING

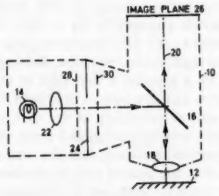
Leon Andre Pieters, Cambridge, England, assignor to Image Analysing Computers Limited, Melbourne, Royston, Hertfordshire, England

Filed Feb. 4, 1972, Ser. No. 223,611

Claims priority, application Great Britain, Feb. 5, 1971, 3,994/71

Int. Cl. H04n *5/26*

U.S. Cl. 178—7.2 **16 Claims**



An automatic focusing system particularly adaptable for use with optical microscopes in which a final image is formed on the photo sensitive target of a television camera. Two objects are spaced by different amounts from the reflecting surfaces associated with the specimen under examination such that the reflected images are equally out of focus when the specimen image is in focus on the camera target.

3,786,185

CATHODE-RAY TUBE—YOKE PLATFORM—YOKE COMBINATION AND METHOD OF ASSEMBLING THE COMBINATION

Terry Monroe Shrader, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

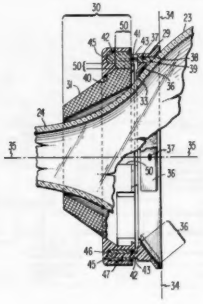
Filed Jan. 14, 1972, Ser. No. 217,756

Int. Cl. H04n *5/64*

U.S. Cl. 178—7.8 **9 Claims**

The combination includes a cathode-ray tube in operational relationship with a magnetic deflection yoke. A platform is rigidly adhered to fixed areas on the external surface of the tube with a hardened adhesive material. The hardened adhesive material provides the sole support for the platform and a yoke mounted thereto.

The novel method includes positioning a platform against a tube and injecting a first hardenable liquid adhesive material between at least portions of the positioned platform and the tube. The first adhesive material is permitted to harden and to fix the platform on the tube. A housing for a magnetic deflection yoke with the yoke therein is positioned adjacent the fixed platform, and the position of the housing is adjusted with respect to the fixed platform to obtain a desired operational relationship of the yoke and the tube. The housing with yoke therein is then mounted to the platform in the desired operational relationship.



3,786,186

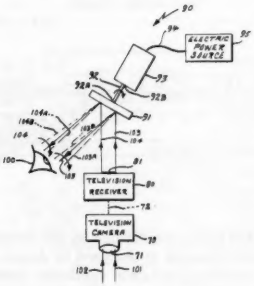
ENHANCEMENT AND DETECTION OF SMALL STATIC OBJECT IN SCENE BY USE OF PROGRAMMED MOTION OF IMAGE OF SCENE

Charles Edgar Thomas, Jr, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 13, 1972, Ser. No. 262,417

Int. Cl. H01j *29/89*; **H04n** *7/18*

U.S. Cl. 178—7.89 **6 Claims**



Method of, and apparatus for, enhancing and detecting a small static object in a scene. The object perceptability against the surrounding scene is enchanced by moving a static image of the scene in a preselected programmed motion. The motion blurs the undesired clutter of the scene; and, the small static object is detected by and because of the trace made by the movement of the image of the small static object.

3,786,187
APPARATUS FOR TESTING SYSTEMS AND DATA TRANSMITTING NETWORKS BY SIMULATION

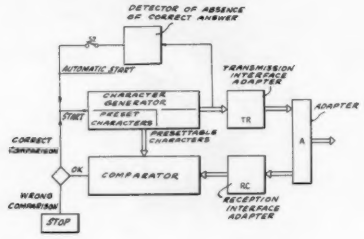
Luciano De Vita, and Emilio Mancini, both of Rome, Italy, assignors to Alitalia Linee Aeree Italiane S.p.A., Rome, Italy

Filed Nov. 24, 1971, Ser. No. 201,842

Claims priority, application Italy, Mar. 23, 1970, 49260 A/70

Int. Cl. H04b *3/46;* **H04l** *25/02*

U.S. Cl. 178—69 A **4 Claims**



An apparatus for testing systems and networks for data transmission by simulation, comprising a character generator of arranged to generate under control a pre-fixed sequence of characters; comparator means for comparing the characters produced by said generator with a sequence of received characters; means for controlling a transmission of the sequence of characters produced by said generator consequent to a favourable comparison; means for causing the apparatus to stop operating consequent to an unfavourable comparison.

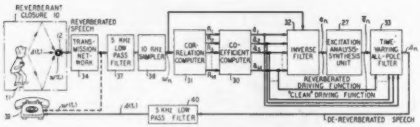
3,786,188
SYNTHESIS OF PURE SPEECH FROM A REVERBERANT SIGNAL

Jont Brandon Allen, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 7, 1972, Ser. No. 311,731

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SA **10 Claims**



Speech that has been reverberated by the transfer function of a reverberant enclosure is analyzed to detect parameters from which an unreverberative synthetic version of the original speech may be constructed. The process involves continuously approximating the vocal tract transfer function of the speaker. The effect of this transfer function is then removed from the reverberant speech by inverse filtering, the residual signal being the glottis excitation signal reverberated by the room. The reverberant excitation function is then analyzed to determine when the speaker's driving function is voiced or unvoiced, the periodicity when voiced, and a unique gain factor. Then clean speech is synthesized using the foregoing three parameters operating on an all-pole filter that is continuously adapted to approximate the vocal tract transfer function.

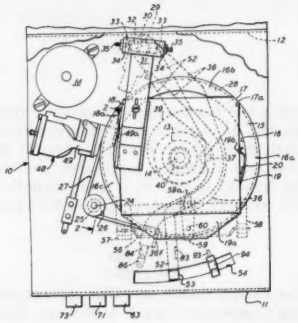
3,786,189
TELEPHONE ANNOUNCING AND MESSAGE RECORDING MACHINE

Thomas J. Gaven, Livingston; Harry E. Crocker, Irvington, and Edward Feldman, Teaneck, all of N.J., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 7, 1972, Ser. No. 216,071

Int. Cl. H04m *1/64;* **G11b** *17/06*

U.S. Cl. 179—6 R **10 Claims**



A telephone announcing and message recording apparatus comprises an announcing instrument having a turntable with a square recess open at one side to receive a square record faced with a magnetic coating. In the bottom wall of the turntable is a notch engageable by a latch relay which also controls the power to the drive motor to stop the turntable always in the same load-unload position. During recording of an announcement by a user on a first part of the record a tone arm and a memory arm are moved in unison, but upon shifting the instrument out of recording at the end of the announcement the memory arm is disengaged from the tone arm and latched in its operated position, and the instrument continues to run to the end of the record only to perform a timing function. When the machine is placed in telephone answering condition it first plays back the announcement to the subscriber responsive to a ringing signal. When, thereupon, the tone arm passes the memory arm a switch is operated to connect the telephone line to a message recorder and a signal is fed on the line to apprise the subscriber that a message may now be recorded. At the end of the recording of a message another signal is fed into the line and the tone arm returned to start position.

3,786,190
TELEMETERING SYSTEM FOR MULTI-CHANNEL DATA OVER VOICE GRADE TELEPHONE LINES

John R. Pori, Novato, Calif., assignor to Parallel Data Systems, San Francisco, Calif.

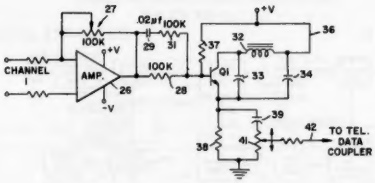
Filed Dec. 23, 1971, Ser. No. 211,221

Int. Cl. H04m *1/06*

U.S. Cl. 179—2 DP **1 Claim**

A telemetering system for multi-channel data such as EEG data where eight channels of such data are frequency modu-

lated by eight different carrier frequencies and transmitted over a telephone line pair and then filtered and demodulated.



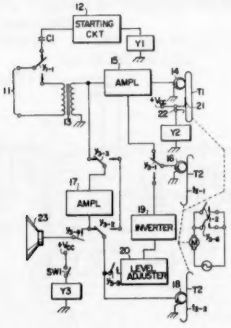
The demodulator for each channel includes only a single inductor which is matched with the modulator inductor.

3,786,191

AUTOMATIC TELEPHONE ANSWERING DEVICE WITH SIMULTANEOUS MESSAGE RECEPTION AND TRANSMISSION

Toshifumi Nagasawa, Tokyo, and Haruhiko Ohshima, Kawasaki, both of Japan, assignors to Pioneer Electronics Corporation, Tokyo, Japan

Filed Mar. 28, 1972, Ser. No. 238,902
Claims priority, application Japan, Apr. 2, 1971, 46/20162
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **5 Claims**



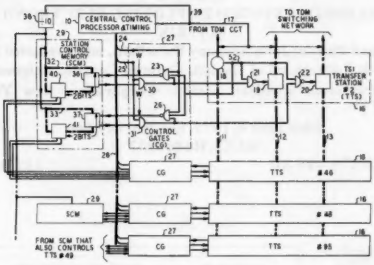
An automatic telephone answering device wherein a message recording tape is started to run simultaneously with the start of running of an answering tape having an answer signal recorded thereon. The message recording tape is recorded on its first track with only the answer signal and on its second track with a composite signal consisting of the answer signal and the incoming message signal. At the time of reproduction, the answer signal on the first track of the recording tape is phase-inverted and the composite signal reproduced from the second track of the recording tape is mixed with the phase-inverted answer signal to cancel the answer signal, whereby only the message signal is audibly reproduced by a speaker.

3,786,192

SHIFT CIRCUITS WITH OUTPUT CONTROL GATED BY COMBINED CONTROL MEMORY

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 11, 1972, Ser. No. 296,577
Int. Cl. H04j 3/00
U.S. Cl. 179—15 AQ **10 Claims**



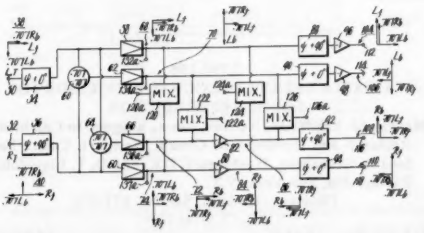
In a planar shifting technology time slot interchanger, a shift register has selectable output gates at different stages thereof, which gates are arranged to be actuated under the burden of predetermined restrictions. Those restrictions are such that in a numerical sequence of the gates along the shift register, a central gate, number C_N, is actuatable most frequently; and other gates at increasingly remote positions from the central gate in the sequence are actuatable with decreasing frequency. A control memory loop connected to control operation of one of the output gates is further connected to control operation of another output gate in the sequence on the same side of the central gate. The two gates so controlled have sequence numbers that, when considered modulo-C_N, are complementary with respect to C_N.

3,786,193

FOUR CHANNEL DECODER WITH VARIABLE MIXING OF THE OUTPUT CHANNELS

Katsuaki Tsurushima, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 17, 1972, Ser. No. 272,439
Claims priority, application Japan, July 19, 1971, 46/53771
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ **9 Claims**



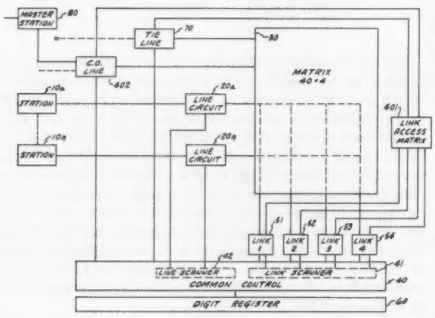
A crosstalk eliminating circuit for use in a four channel stereo decoder of the type which converts two composite signals L_T and R_T into four output signals containing dominant signal components L_f, R_f, L_b and R_b, respectively, with each of the output signals further including subdominant signal components as crosstalk. The elimination circuit includes a crosstalk detecting circuit having a plurality of all wave rectifying

circuits and subtraction circuits for producing separate signals for controlling a plurality of mixing circuits connected between separate pairs of output channels for transmitting the output signals, the mixing circuits being controlled so as to mix two output signals in accordance with the respective control signal in such a manner that the crosstalk signals contained therein are cancelled.

3,786,194
TELEPHONE SYSTEM EMPLOYING ELECTRONIC MATRIX

Edouard Pinede; John Anthony Barsellotti, and Frederico Riccardo Laliccia, all of Guelph, Ontario, Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 4, 1971, Ser. No. 149,960
Int. Cl. H04q *1/52*
U.S. Cl. 179—18 AD **12 Claims**



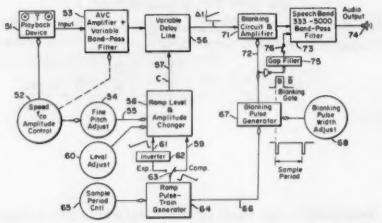
A common control, multi-station, multi-conversation path intercom system using a single stage, crosspoint matrix for effecting the switching between stations. Two digit dialling, either multifrequency tone or dial pulse is used to control the switching to a called party. Each station line circuit has a talking potential supply and a current control network. The conversation link circuit provides a choke coil isolating talking currents from the talking battery. Each matrix crosspoint has a plural transistor network for performing its switching through function.

3,786,195
VARIABLE DELAY LINE SIGNAL PROCESSOR FOR SOUND REPRODUCTION

Murray M. Schiffman, Newton, Mass., assignor to Cambridge Research and Development Group, Westport, Conn.; Sanford D. Greenberg, Washington, D.C. and D. T. Liquidating Partnership, New York, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,571
Int. Cl. G10l *1/06*
U.S. Cl. 179—15.55 T **65 Claims**

An electrical delay line which has variable delay controlled by a signal input thereto is connected in a sound signal channel for signals such as human speech, to compress or expand the sound signal waveform depending on whether the time delay in the line is increased or decreased. By periodically sweeping the delay line from minimum to maximum time delay or vice-versa, repeated segments of a continuous sound signal waveform are processed so that an output audio signal can be obtained having the original frequency components of the signal and occupying a time duration which is equal to or smaller or larger than the original sound sequence with the successive segments of the signal processed by the variable delay line assembled with regard both to the significant

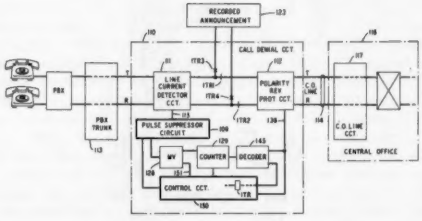


parameters of human speech or other coding and the electrical conditions imposed by the system to produce a composite audio signal which is an intelligible replica of the original and substantially free of annoying aberrations introduced by the delay line processor. Variable delay using analog or digital signal storage is also provided.

3,786,196
TOLL CALL DENIAL CIRCUIT

Perry Thomas Gresham, Fort Worth, Tex., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,441
Int. Cl. H04m *1/66*
U.S. Cl. 179—18 DA **9 Claims**

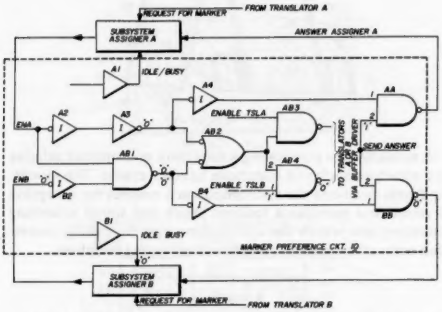


A toll call denial circuit for allowing local calls and blocking toll calls outgoing from PBXs (Private Branch Exchanges). Following seizure of a central office line by a PBX station dialing "9", the call denial circuit distinguishes between local and toll calls by having a counter and decoder register and check the first digit dialed over the line to determine if it is a toll access digit such as "0" or "1". The denial circuit includes a pulse suppressor circuit having a resistor-capacitor filter which prevents spurious signals on the line from being detected as dial pulses. Following registration of the first dialed digit, the time characteristic of this filter is changed to prevent the counter from registering dial pulses of a subsequently dialed digit but allowing a response to an on-hook condition on the line to release the denial circuit.

3,786,197
PREFERENCE CIRCUIT FOR A MARKER

Melvin A. Jacobs, Hinsdale, and David Q. Lee, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 2, 1972, Ser. No. 303,184
Int. Cl. H04q 3/42
U.S. Cl. 179—18 EB 5 Claims

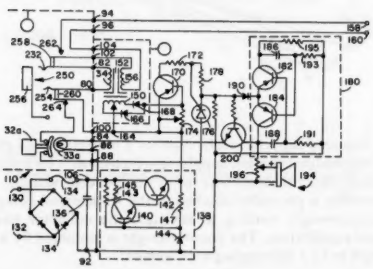


A preference circuit within a marker for a common control electronic communication system which, upon simultaneous seizure attempts, automatically inhibits the seizure of the marker by one of a pair of assigners and selects the other one thereof for service.

3,786,198
CIRCUIT AND APPARATUS FOR BRIDGING AND MONITORING

Henry V. McNulty, Arcadia, and Melvin Neal Oatis, Tustin, both of Calif., assignors to Telephonic Equipment Corporation, Santa Ana, Calif.

Filed Feb. 17, 1972, Ser. No. 227,023
Int. Cl. H04m 3/22
U.S. Cl. 179—27 FH 5 Claims

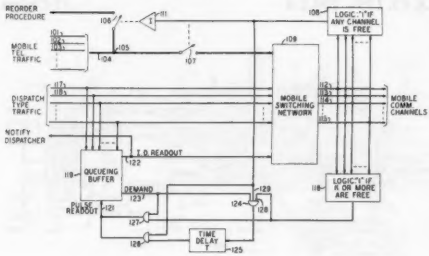


A telephone bridging apparatus which can be utilized with telephone switchboards such as those provided by an answering service. The apparatus in part comprises an insertable module in the switchboard, having internal connections and appropriate switching functions for either a single or a double cord switchboard. The module has circuitry which operates cooperatively with a monitoring circuit and the remainder of the apparatus for utilization with either a double or single cord switchboard and comprises in part an audio alert as well as a visual alert to help monitor a call.

3,786,199
MIXED TRAFFIC MOBILE RADIO SYSTEM

Andrew Rimbach, Jr., Monmouth Beach, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 22, 1971, Ser. No. 191,931
Int. Cl. H04m 7/04
U.S. Cl. 179—41 A 2 Claims

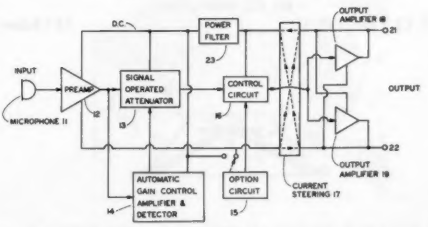


In order to merge telephone traffic and dispatch traffic into a common network without degrading either type of service over that enjoyed in separate systems, dispatch type traffic is somewhat degraded during particular high traffic situations. The telephone traffic is served upon demand except when no communication channels are available for assignment. The identity of each requesting dispatcher is read into a queuing buffer to await service. So long as more than a predetermined number of channels are available, the dispatch calls are read out of the buffer virtually upon their receipt. Whenever fewer than the predetermined number of channels are available, pulses which energize the service of dispatch calls are subjected to a time delay. After that delay, so long as any channel is still available, the next dispatcher in queue is served.

3,786,200
AMPLIFIER FOR USE IN COMMUNICATION SYSTEMS

Hans R. Camenzind, Santa Clara, Calif.

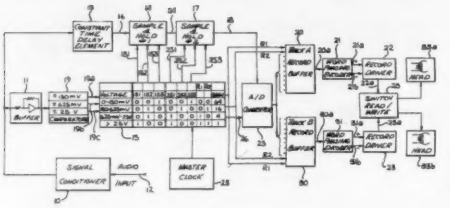
Filed May 17, 1972, Ser. No. 254,059
Int. Cl. H04m 1/60
U.S. Cl. 179—81 B 11 Claims



An amplifier for use in communication systems in which the output lines supply power to the amplifier which can operate from either polarity of supply voltage which may also be a relatively low voltage. The amplifier receives an input signal and applies the signal to said pair of lines. In one embodiment of the amplifier it can operate at high gain in response to an input signal and low gain in absence of an input signal to provide suppression of background noise. Another embodiment provides control of the amplifier gain as a function of operating current to more closely match the output characteristics of carbon microphones. The amplifier disclosed is particularly

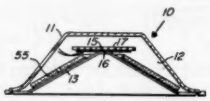
suitable for integration into a silicon monolithic bipolar circuit.

3,786,201
AUDIO-DIGITAL RECORDING SYSTEM
John P. Myers, 1513 Highvale Trl., Topanga Canyon, Calif., and Gleb Tschapek, P.O. Box 506, Hermosa Beach, Calif.
Filed Feb. 4, 1972, Ser. No. 223,532
Int. Cl. G11b *5/02*
U.S. Cl. 179—100.2 R **32 Claims**



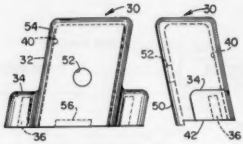
A system for converting an input analog signal, such as an audio signal or signal representative of sound into a digital form for storing in digital form and for reconstructing the input analog signal from the digital form is disclosed. The system includes sampling means for converting the input audio signal into a binary format which includes ranging bits and adjusted magnitude bits. This permits the recording in digital form of audio signals of a wide dynamic range with a reduced number of bits. Additionally, the disclosed encoding method for encoding digital words prior to recording reduces pulse crowding on magnetic tape and achieves higher bit packing densities. The system may be used with existing professional audio tape drives with tape speeds of approximately 30 ips or less.

3,786,202
ACOUSTIC TRANSDUCER INCLUDING PIEZOELECTRIC DRIVING ELEMENT
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 10, 1972, Ser. No. 242,501
Int. Cl. H04r *17/00*
U.S. Cl. 179—110 A **15 Claims**



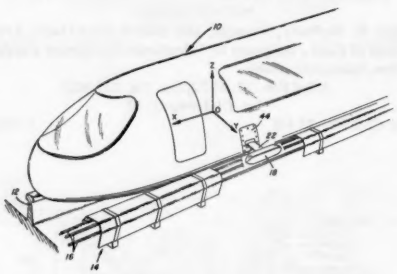
A disk shaped piezoelectric element constructed to operate in a planar mode so as to define a first overtone nodal ring on one of the major surfaces, a conically shaped diaphragm having a truncated apex defining a generally circular area affixed to a major surface of the element concentric with the nodal ring and spaced radially therefrom so as to reduce the amplitude of the output of the first overtone to approximately the amplitude of the output of the fundamental frequency, and a rubber disk affixed to the opposite major surface of the piezoelectric element to lower the fundamental resonance frequency and damp the peak output of the fundamental and first overtone resonance frequencies to provide a flat response over a desired bandwidth.

3,786,203
MICROPHONE MOUNTING
Willis C. Reddick, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 15, 1972, Ser. No. 253,080
Int. Cl. H04m *1/14*
U.S. Cl. 179—146 R **5 Claims**



A mounting for positioning a miniature microphone relative to a structure such as a telephone handset cradle. The mounting firmly positions the microphone in a manner for reception of sound and provides a resilient shock and sound absorbing mounting into which the microphone may be readily assembled without the need for additional mounting members.

3,786,204
BALANCED SUPPORT MECHANISM FOR A LINEARLY MOVABLY CURRENT COLLECTING HEAD
Daniel Laurent, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Aug. 2, 1971, Ser. No. 167,912
Claims priority, application France, May 11, 1971, 71.17071
Int. Cl. B60l *5/12*
U.S. Cl. 191—48 **9 Claims**

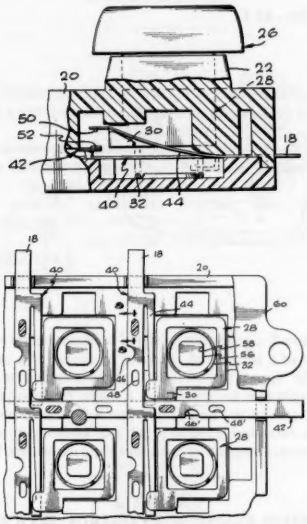


A balanced support mechanism for a collector head guided in a longitudinal current supplying passageway which extends parallelly to the trackway of a high-speed vehicle. The mechanism is pivotally attached to the vehicle and comprises a counterweight tending to maintain the collector head in neutral equilibrium. The counterweight is sustained by a pantograph or by a telescoping arrangement.

3,786,205
KEYBOARD SWITCH ASSEMBLY WITH MOVABLE, MULTI-CONTACT MEANS AND ASSOCIATED SWINGER PORTIONS
Wallace A. Lien, Palos Verdes Estates, Calif., assignor to Becton, Dickinson Electronics Company, Rutherford, Nev.
Filed May 11, 1972, Ser. No. 252,421
Int. Cl. H01h *13/70*
U.S. Cl. 200—5 A **5 Claims**

A keyboard is provided with an improved contact switch comprising movable elements extending from and integral

with an elongated strip member. Other elongated strip members arranged orthogonally in a vertically displaced plane are positioned in the travel path of the movable elements. The movable elements are held in a third plane and, when



released, engage the crossing strip members. The push buttons include flanged key tops which cooperate with raised collars on the top plate to form a substantially liquid excluding arrangement.

3,786,206

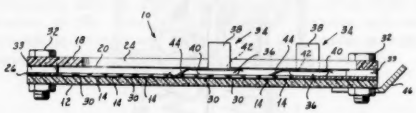
PRICE BOARD SLIDE SWITCH

Albert Kurimsky, Dover, N.J., assignor to Rowe International Inc., Whippany, N.J.

Filed Oct. 30, 1972, Ser. No. 302,049

Int. Cl. H01h *15/06*

U.S. Cl. 200—16 D **4 Claims**



A price board selection switch assembly for facilitating the operation of selectively setting and of changing the various prices at which a plurality of respective merchandising machine delivery units will dispense articles of merchandise in which a plurality of sliding contacts are mounted for movement along respective first printed product line conductors on the undersurface of an upper board and for movement of spring fingers on the contacts over lines of holes in a detent board for selective engagement with second printed price line conductors carried by the upper surface of a lower board and extending in a direction generally perpendicular to that of the first conductors.

3,786,207

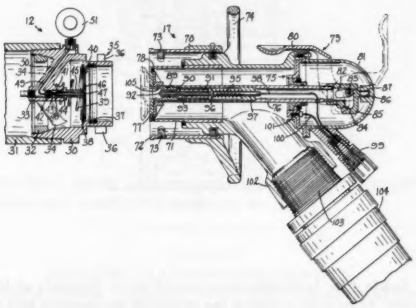
ELECTRICAL SWITCH ASSEMBLY AND VALVE FOR LIQUID FILLING SYSTEM

Edward F. Houston, Madison; Robert L. Wallace, Wethersfield; William Rochette, Waterbury, and Charles A. Chaponis, Meriden, all of Conn., assignors to The Houston Company, Cheshire, Conn.

Filed July 10, 1972, Ser. No. 270,481

Int. Cl. H01h *9/06*

U.S. Cl. 200—61.86 **7 Claims**



A liquid filling system comprising a filling connector on a tank and a nozzle connectable to a reservoir where an electrical connection is made between the connector and nozzle to control an electrically operated valve in the line between the reservoir and nozzle.

3,786,208

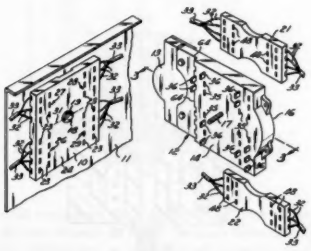
PLUG-IN TIMER ASSEMBLY

James D. Edwards, Russiaville, Ind., assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Aug. 9, 1972, Ser. No. 279,217

Int. Cl. H01r *13/70*

U.S. Cl. 200—51 R **12 Claims**



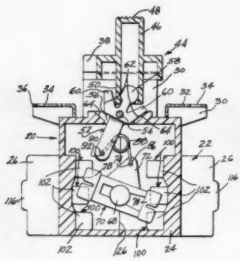
A control system is disclosed for washers, dryers and the like in which a motor-driven timer automatically operates the appliance through a predetermined cycle. The control system includes a mounting base adapted to be permanently connected to the appliance frame and a motor-driven timer which is removably plugged into the base with electrical connectors which function to provide electrical connection and the mounting of the timer. The connectors are provided in a pattern which prevents improper installation. Separate terminal assemblies are provided to plug into the rearward face of the timer for additional connections. Here again, the terminals provide both the electrical connection and the mounting of the terminal blocks.

3,786,209

SNAP SWITCH WITH PRE-WIRED TERMINALS

Allen J. Bury, Prospect Heights, Ill., assignor to Molex, Incorporated, Downers Grove, Ill.

Filed Jan. 3, 1972, Ser. No. 215,022
Int. Cl. H01h *13/26*
U.S. Cl. 200—67 C **7 Claims**



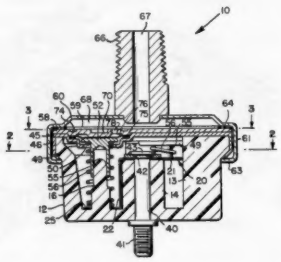
Spade type terminals are crimped on to the ends of lead wires. After such crimping the terminals are inserted into the housing of a switch and lock in place. The switch is provided with a toggle actuator to effect movement of a movable switch contact with a snap action between the inserted terminals serving as fixed contacts.

3,786,210

SEQUENTIALLY ACTUATED PRESSURE SWITCHES HAVING SEPARATE RESISTOR ELEMENTS ASSOCIATED WITH EACH

Peter M. Byam, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,608
Int. Cl. H01h *35/34*; **H01c** *13/00*; **G01l** *7/08*
U.S. Cl. 200—81.4 **7 Claims**



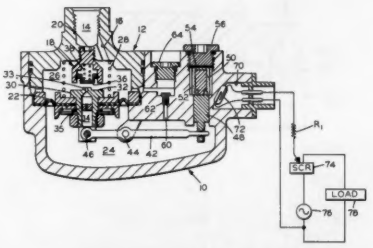
Three different pressure-operated switches are mounted in a housing to be connected to a fluid pressure system for operation thereby at three different values of the system pressure - e.g. low, medium and high. Each switch comprises a movable contact; and these contacts are connected through three different resistors with a common terminal in the housing. These contacts are urged by separate springs against one of three separate flexible diaphragms. As the fluid pressure rises, one diaphragm after the other urges its associated contact against a grounded portion of the housing successively to connect the resistors in parallel circuit between the terminal and ground.

3,786,211

DIFFERENTIAL PRESSURE RESPONSIVE MAGNETICALLY ACTUATED SWITCH RESPONSIVE ONLY TO SUDDEN PRESSURE CHANGES

Roger C. Popp, Chesaning, Mich., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed July 19, 1972, Ser. No. 273,288
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 T **8 Claims**



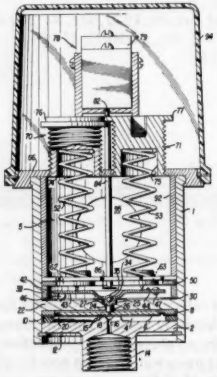
Apparatus for generating a signal commensurate with a rate of change of a monitored pressure in excess of a preselected value. The apparatus includes means coupled to a spring biased diaphragm for modifying a magnetic field in response to movements of the diaphragm and a field responsive signal generator mounted exteriorly of the housing in which the diaphragm and magnetic field generating means are located.

3,786,212

CONDITION RESPONSIVE CONTROL DEVICE WITH CAPACITY FOR INDEPENDENT ADJUSTMENT OF CONTROL POINTS

Ernesto Juan Weber, Lluvia 470, State of the Federal District, Mexico

Continuation-in-part of Ser. No. 154,536, June 18, 1971. This application Mar. 21, 1972, Ser. No. 236,732
Claims priority, application Mexico, May 31, 1971, 44,155
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 R **43 Claims**



A control device wherein a pressure sensitive element displaceable by pressure variations, transmits linear motion to a balance plate. Stops associated with the balance plate define a pair of axes about which the balance plate alternately pivots. The device includes a single control such as a microswitch having a single actuator displaceable between first and second positions corresponding to mutually cancelling control modes.

Pivotal movement of the balance plate about one axis effects movement of the actuator through the first position while pivotal movement about the other axis effects movement of the actuator through the second position. The pressures at which the respective positions are attained can be independently determined by adjustable springs acting on the balance plate and through the respective axes.

3,786,213

ELECTRIC SWITCHING DEVICE COMPRISING INSULATING PARTS COMPRISING AN ACRYLATE RESIN BINDER

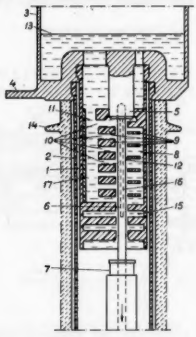
Goran Holmstrom, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 14, 1972, Ser. No. 226,072

Claims priority, application Sweden, Feb. 22, 1971, 2205/71; Jan. 19, 1972, 563/72

Int. Cl. H01h *33/04*

U.S. Cl. 200—144 C **8 Claims**



In an electrical switching device which includes insulating parts subjected to the influence of electric arcs, the insulating parts are formed of mouldings having a binder which consists essentially of a mixture of a linear acrylate polymer and a monomeric acrylate compound which is polyethylene glycol dimethacrylate or a polyethylene glycol diacrylate converted into polymerized form. The binder may contain an additive resin containing ethylenically unsaturated groups in the monomeric acrylate compound in a quantity of at most 25 percent of the total weight of linear acrylate polymer, monomeric acrylate and additive resin. The binder may also contain a powdered filler or a fibrous reinforcing material.

3,786,214

INTERLEAVING-ROD TYPE VACUUM INTERRUPTER HAVING TWO BREAKS IN SERIES BETWEEN EACH PAIR OF RODS

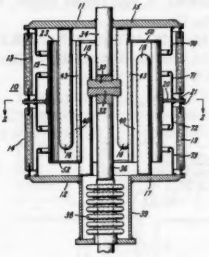
Joseph C. Sofianek, Broomall, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Jan. 19, 1973, Ser. No. 325,181

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **11 Claims**

A vacuum-type electric circuit interrupter comprises interleaving rod electrodes of alternating polarity arranged in a ring pattern and a tubular metal shield disposed around the ring of rod electrodes and normally electrically isolated from the rod electrodes. The tubular shield comprises metal partitions projecting from regions radially outside the ring radially inward into the spaces between immediately-adjacent rod electrodes, thereby dividing each of these spaces into two series-related arcing gaps respectively disposed on opposite sides of each of said metal partitions.



3,786,215

ELECTRICAL COMPRESSION SWITCH

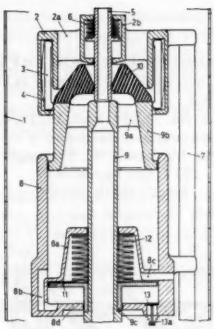
Gerhard Mauthe, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 26, 1971, Ser. No. 202,309

Claims priority, application Switzerland, Dec. 1, 1970, 17815/70

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A **8 Claims**



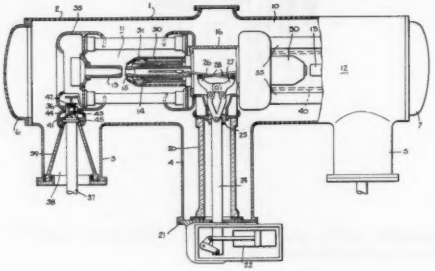
An electrical switch of the compression type wherein for quenching the arc drawn in a gap formed between the contacts as they disengage, a pressurized gaseous quenching medium is caused to flow into the gap. The quenching medium is compressed during a so-called pre-compression phase of the switch contact movement, and prior to disengagement of the contacts, by a piston and cylinder arrangement surrounding the movable contact, there being an energy-storing device in association with the piston which latter is actuated in one direction within its cylinder by the movable contact during a contact-closing movement to bring the gaseous quenching medium through a one-way valve into the cylinder and also store energy. During the first phase of a contact-opening movement the stored energy acts upon the piston causing it to move in the opposite direction thus compressing the gas within the cylinder and subsequently freed to flow into the gap between the contacts as soon as they disengage.

3,786,216

HIGH-VOLTAGE CIRCUIT BREAKER EQUIPPED WITH MEANS FOR PRECLUDING THE TRANSFER OF MECHANICAL SWITCHING FORCES

Helmut Beier, Rauchstr. 9, and Dieter Noack, Berner Str. 13-14, both of Berlin, Germany

Filed Mar. 28, 1972, Ser. No. 238,843
Int. Cl. H01h 33/54
U.S. Cl. 200—148 D 5 Claims



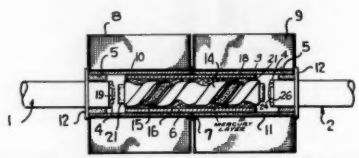
A high-voltage circuit breaker has a metal housing and at least two switching units for switching the breaker between the on and off positions. The switching units are mutually connected in series and are disposed in the housing. A centrally located support member is also provided and is rigidly connected to the switching units in the housing. At least two feed-through conductors are mounted in the housing and an electrical connector is provided for flexibly connecting the conductors to corresponding ones of the switching units so as to preclude the transfer of mechanical force therebetween.

3,786,217

POSITION-INSENSITIVE MERCURY RELAY

Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension Inc., Princeton, N.J.

Division of Ser. No. 71,294, Sept. 10, 1970, Pat. No. 3,715,546, which is a continuation-in-part of Ser. No. 880,128, Nov. 26, 1969, Pat. No. 3,644,693. This application Nov. 1, 1972, Ser. No. 302,677
Int. Cl. H01h 29/00
U.S. Cl. 200—214 3 Claims



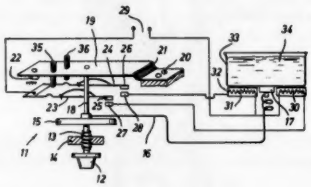
A miniature mercury switch, comprising an enclosure including a tube having a mercury wettable inner surface, within which a contact carrying shuttle is movable along the axis of the tube. The shuttle is not mercury wettable except for a slot or groove extending between its ends and for contact surfaces at its ends, but it rides on a mercury layer attached to the inner surface of the tube. Secured within and extending into the ends of the tubes are unwettable rods of magnetic material having stationary end contacts which are mercury wettable. The contacts on the shuttle ends include tantalum or niobium spacers extending beyond mercury wettable end contact surfaces on the shuttle, the spacers accepting the impacts when the relay contacts operatively close, which implies that the wettable contact areas on the shuttle ends closely approach the stationary end contacts, so that the mercury layers coalesce, but the wettable surfaces do not impact. The quantity of mercury within the enclosure is only sufficient to form a layer of mercury on the mercury wettable surfaces within the enclosure, but insufficient to form a pool of mercury, or to cover unwettable surfaces while wettable surfaces are covered, and the slot or groove in the shuttle facilities transfer of mercury from end to end of the enclosure, which prevents pooling at either end of the enclosure concomitant with depletion at the other, due to imbalance of mercury transfer during relay operation. Stationary contacts are, for open contact condition, spaced from movable contacts, by mercury unwettable surfaces of the enclosure, and the quantity of mercury available is insufficient to cover these unwettable surfaces and also to form a mercury layer on the mercury surfaces.

3,786,218

ADJUSTABLE THERMOSTATIC DEVICE WITH SNAP SWITCHES

Karl Fischer, Oberderdingen, Germany, assignor to E.G.O. Elektro-Gerate AG, Zug, Switzerland

Filed Nov. 18, 1971, Ser. No. 199,870
Claims priority, application Switzerland, Nov. 27, 1970, P 20 58 512.0
Int. Cl. H01h 35/32
U.S. Cl. 200—83 Z 3 Claims



A regulator for a cooker hot plate or other heating appliance has a temperature sensing bulb filled with thermally expansible fluid and connected to a pressure bellows. An adjusting screw spindle acts on the bellows which acts in turn through a strut on a pivotally mounted, spring-biased pressure plate. The strut passes between two snap switches which are adapted to be closed by the pressure plate, acting on the switches through adjusting screws, such that the snap switches open at different temperatures. The pressure plate can include a resilient flexible portion by which the pressure plate is pivotally mounted and at the same time spring-biased towards the snap switches. Compensating bimetal means may be inserted between said pressure plate and said snap switches.

3,786,219

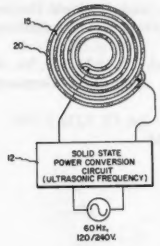
SOLID STATE INDUCTION COOKING SYSTEMS FOR RANGES AND SURFACE COOKING UNITS

William P. Kornrumpf, and John D. Harnden, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,351
Int. Cl. H05b 5/04
U.S. Cl. 219—10.49 18 Claims

Solid state induction surface cooking units for domestic electric ranges and other cooking appliances are defined with respect to the operating parameters and functional components of complete induction heating systems suited for this use. The surface cooking units are designed for reliable, convenient, and safe operation, and for circuit packaging using hybrid and monolithic integrated circuits. Wide range power control of the inverter power circuits is needed for general cooking but is obtained within a limited ultrasonic operating range of the power semiconductors. The inter-dependent elec-

trical and magnetic characteristics utilized in solid state induction cooking are related to the achievement of such desirable user features as the cool cooking surface, fast utensil warm-up, responsive heating, and unrestrained utensil mobility. In addition to cooking by changing the relative heating level, cooking is performed by setting the desired utensil temperature and by setting the desired utensil power level.

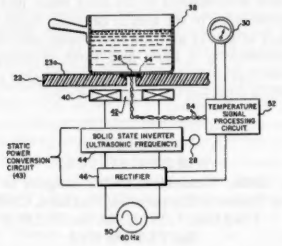


3,786,220

INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL

John D. Harnden, Jr, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,350
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **2 Claims**



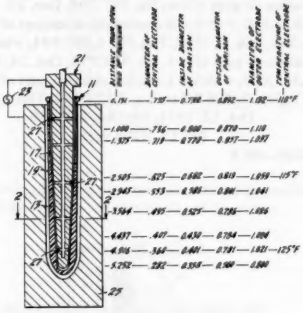
Disclosed herein is an induction range having a counter including a top surface on which a cooking vessel is rested. A temperature sensing unit is located in an opening in the counter. The temperature sensing unit includes a low-restoring-force spring diaphragm which supports a thermistor unit. The temperature sensing unit forms a closure for the opening in the counter such that the temperature sensing unit together with the top surface of the counter provides an uninterrupted work surface which may be easily cleaned. Because energization of an induction coil positioned near the counter induces high frequency heating currents in the vessel only, and because the temperature sensing unit and induction coil are located relative to each other so that the temperature sensing unit is in a region of relatively low magnetic field intensity, the counter and the temperature sensing unit are not directly heated by the action of the induction coil. Hence, materials not employable in prior art conventional electric and gas ranges may now be employed for the counter and temperature sensing unit. Since the spring diaphragm has a low restoring force it is easily compressed by the cooking vessel, enabling the thermistor unit, or temperature sensor, to make positive contact with the vessel in order to sense its temperature. Also, being of a thin elastic material, the spring diaphragm easily contours itself to the irregular surface of cooking vessels. Permanent magnet means may be combined with the diaphragm in order to achieve a more positive coupling with magnetically permeable cooking vessels.

3,786,221

METHOD FOR HEAT TREATING A POLAR, DIELECTRIC PARISON

Alan Silverman, Bridgewater Township, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 29, 1973, Ser. No. 346,172
Int. Cl. H05b *9/04*
U.S. Cl. 219—10.57 **18 Claims**



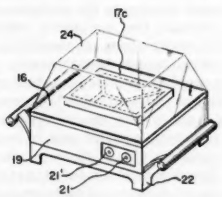
A method of heat treating an axial zone of a polar, dielectrically lossy, thermoplastic, polymeric parison with a high frequency energy source to produce a temperature gradient across the thickness of the sidewall in said zone prior to blow molding the parison into a bottle, whereby the temperature is higher on the inner surface of the parison sidewall than on the outer surface of the parison sidewall.

3,786,222

METALLIC FOIL INDUCTION COOKING

John D. Harnden, Jr., and William P. Kornrumpf, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,570
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **15 Claims**



An ultrasonic frequency induction surface cooking unit heats aluminum foil and other thin metal utensils placed on the cool cooking surface. For optimum heating the aluminum foil has a thickness of 0.5 mils. A uniform heating distribution

is obtained by preferably using a rectangular induction heating coil with several series-connected elongated coil sections, or by varying the metal thickness to graduate the energy acceptance. Frozen convenience foods can be defrosted in this manner, and the aluminum foil can be wrapped about the food and shaped by the user into disposable utensils using a set of molds. Disposable foil cooking obviates the clean-up and storage problems of pots and pans.

3,786,223

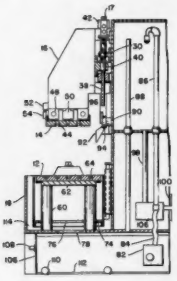
RAM FOR A RECIPROCALLY MOVABLE EDM ELECTRODE

Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 887,795, Dec. 23, 1969, Pat. No. 3,612,810, which is a continuation-in-part of Ser. No. 696,195, Jan. 8, 1968, Pat. No. 3,485,991, which is a continuation-in-part of Ser. No. 504,971, Oct. 24, 1965, Pat. No. 3,363,083, which is a continuation-in-part of Ser. No. 250,321, Jan. 9, 1963, Pat. No. 3,222,494. This application Oct. 12, 1971, Ser. No. 188,539

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 V **4 Claims**



A machine tool for electrical machining is disclosed including a ram portion for reciprocally moving an electrode supported thereby transversely of a workpiece while moving the electrode toward the workpiece. The ram is moved toward the workpiece in the machine tool disclosed by a screw and nut mechanism driven by a rotary hydraulic motor. The electrode supported by the ram portion includes a surface extending in the transverse direction adapted to be maintained in controlled spaced apart relation to the workpiece on movement of the electrode toward the workpiece whereby total form machining of the workpiece is accomplished by the electrode on transverse reciprocal movement thereof.

The machine tool further includes a stationary table for supporting a workpiece and a movable dielectric work tank having an opening in the bottom thereof operable in conjunction with the table to provide a sealed tank in one position thereof and to permit rapid draining of dielectric through the bottom of the tank on downward movement of the tank relative to the table whereby the workpiece and table are exposed for inspection. A system is also disclosed for supplying clean dielectric to the work tank for pumping dielectric from the work tank to a storage tank and for pumping the dielectric from the storage tank through a filter back to the work tank or back to the storage tank. The dielectric system also includes a removable tray for receiving contaminated electrolyte to be cleaned or disposed of.

3,786,224

METHOD FOR PRODUCING STRIPS OF INSULATING MATERIAL HAVING ELECTRICALLY CONDUCTIVE COATINGS WITH A COATING FREE MARGINAL EDGE SURFACE

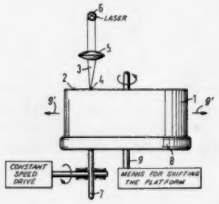
Hermann Heywang, and Gerhard Hoyler, both of Munich Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 21, 1971, Ser. No. 164,667

Claims priority, application Germany, July 23, 1970, P 20 36 663.6

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **13 Claims**



The present invention is directed to a method and device for removing a coating such as a metalized coating from a coated surface of a strip of insulative material by utilizing a laser beam which is directed parallel to the coated surface with its focal point position adjacent to the portion of the coated surface to be removed. Preferably the strip is either coiled in a roll with the edge portions forming a frontal surface and the roll is rotated with respect to the laser beam and shifted in a plane perpendicular to the axis of the laser beam or the strips are arranged in stacks and the laser beam and the stack are moved relatively in a back and forth direction and in a direction vertical to the back and forth direction to decoat the coated surface adjacent the edge of the strip.

3,786,225

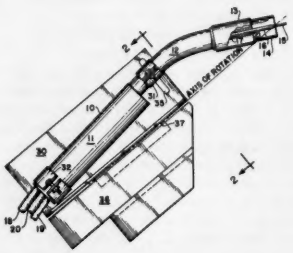
WELDING FIXTURE

Francis E. Gibbs, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 7, 1972, Ser. No. 312,902

Int. Cl. B23k *9/12*

U.S. Cl. 219—124 **8 Claims**



A fixture for the welding of metal products which provides a pivotal mode of oscillation of the welding torch about the tip of the torch. The pivotal mode of oscillation is particularly effective in the arc welding of thick members with a narrow welding groove.

3,786,226

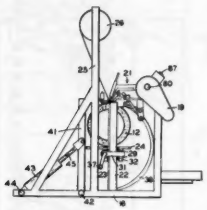
JACKET FOR CYLINDRICAL ARTICLE AND METHOD AND APPARATUS FOR FORMING SAID JACKET

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 845,404, July 28, 1969, Pat. No. 3,660,890. This application Mar. 6, 1972, Ser. No. 232,310

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R 9 Claims



A duct of thermal insulation is jacketed with a gas impermeable sheet material with a longitudinal seam formed by turning the mating ends of the sheet material outwardly and thermally fusing those ends into a linear nodular bead. In the case of metal foils of a few thousandths of an inch in thickness the bead is of the order of a thirty-second of an inch and is turned into the foil jacket to present a smooth non-cutting surface.

Semi-butt welds of foil are made by clamping the foil in face to face relationship along an essentially line contact and moving an arc welding electrode with associated gas jets for a non-oxidizing gas parallel to and in close spaced relation to the clamp line. Jacketing for preformed ducts of glass or other fiber type insulation is drawn from a supply of sheet stock to form a catenary loop in which a preformed duct is placed. Jaws forming unitary clamps and welding electrodes are closed to close the opposite sides of the loop of foil around the duct and upon each other. The foil is severed closely adjacent the clamps and the electrode with its jets for the gas is moved along the exposed edges of foil adjacent the electrode clamps while drawing an arc to fuse the opposed foil surfaces together. The clamps are then released, the jacketed duct removed from the welding apparatus and the radially extending, fused foil bead pressed parallel to the outer face of the duct.

3,786,227

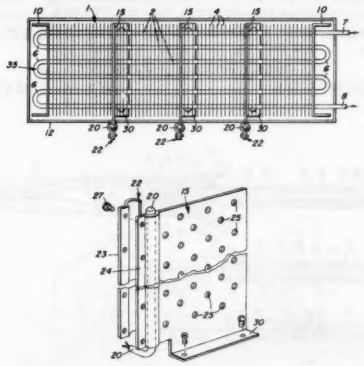
HEAT EXCHANGER DEFROST APPARATUS

Ronald W. Seipp, Rosemont, and Harold E. McClure, Wayzota, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 15, 1972, Ser. No. 306,665

Int. Cl. H05b 1/00; F25d 21/00

U.S. Cl. 219—201 4 Claims



A plate and tube heat exchanger assembly includes a plurality of coolant transporting tubes and a plurality of spaced plates to be periodically defrosted. The tubes pass through the plates and are in heat conducting relationship therewith at junction points with the plates. At least one but less than all of the plates may be modified, according to the instant invention, to include an electric heating element disposed at one end thereof for imparting heat through the plate and to the tubes and other plates at the junction points therebetween at predetermined times for periodic defrosting. The thickness of the plates having heating elements associated therewith are of a greater thickness than the remainder of the plates.

3,786,228

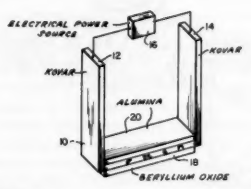
ELECTRIC SOLDERING IRON TIP

Frank S. Castellana, New York, N.Y.; Jack Liker, Wayne, N.J., and Steve Kokolis, Staten Island, N.Y., assignors to Karl Roesch Inc., New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,309

Int. Cl. H05b 3/10; B23k 3/02

U.S. Cl. 219—233 12 Claims



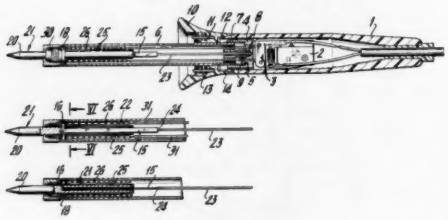
An electric soldering iron tip includes a U-shaped metallic heating member formed from an elongated strip of Kovar or other low expansion iron-nickel alloys. The base portion of the U-shaped heating member has an elongated strip of ceramic material, such as beryllium oxide, attached to one side thereof for receiving heat from the heating member and forming a soldering surface for engaging the work to be soldered in order to apply heat thereto for soldering purposes. A second ceramic strip, formed of alumina, is connected to the opposite side of the base portion of the heating member from the first ceramic strip for preventing deformation of the tip due to differences in the coefficients of expansion of the first ceramic strip and the heating member to which it is attached. The ceramic strips are brazed to the heating member to provide a strong bond having excellent thermal conductivity characteristics. The arm sections of the U-shaped heating member are adapted to be connected to a source of electrical energy to effect flow of heating current through the member.

3,786,229

THERMOSTATICALLY CONTROLLED ELECTRIC SOLDERING IRON

Friedrich Hombrecher, Wertheim/Main, Germany, assignor to Ersa Ernst Sachs KG, Wertheim/Main, Germany

Filed May 30, 1972, Ser. No. 257,802
Claims priority, application Germany, July 6, 1971, P 21 34 560.8
Int. Cl. H05b 1/02; B23k 3/04
U.S. Cl. 219—241 6 Claims



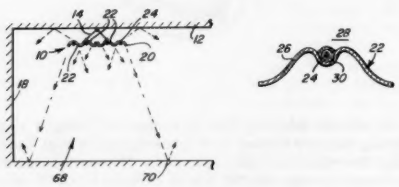
An electric soldering iron comprises, a tubular housing having a soldering element therein with a forward tip portion which projects out of the housing and a core portion which is located in the housing within an electrical resistance heating element. A switch for regulating the current to the heating element is actuated by a control rod which comprises an elongated rod member connected to a tongue portion of a material of good thermal conductivity and high thermal stability, such as refined steel, silver or nickel, which rides in a longitudinal slot defined along the length of the core so that the tongue is located adjacent the tip portion which projects from the housing. The rod is of a low thermal coefficient of expansion and its movement is influenced by the changes of temperature of the solder heating element tip portion to actuate the switch contained in the housing.

3,786,230

RADIANT HEATER

Frank J. Brandenburg, Jr., Rt. 3, Box 28, Ashland, Va.

Filed Dec. 14, 1971, Ser. No. 207,875
Int. Cl. H01b 1/02, 3/02
U.S. Cl. 219—345 7 Claims



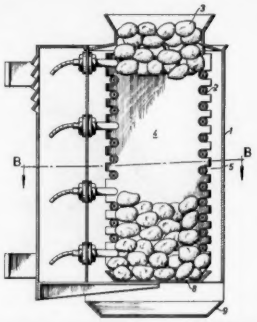
A radiant heater with a panel forming corrugations and having at least one heating element mounted on one of the corrugations. The panel is mounted at a distance from a surface partially defining a space to be heated for permitting fluid circulation between the panel and the space. The heating element is arranged in a groove defined at the apex of a convex surface defined by the corrugation, and is arranged facing the space defining surface. When a plurality of heating elements are provided, a thermostat having a set of contacts for each heating element is provided for actuating at least a portion of the elements at a predetermined temperature different from that for the other heating elements.

3,786,231

ELECTRICALLY HEATED SAUNA BATH UNIT

Nils Allan Emanuel Torvfelt, Enkoping, Sweden, assignor to AB Bahco Ventilation, Enkoping, Sweden

Filed Nov. 2, 1971, Ser. No. 194,977
Claims priority, application Sweden, Nov. 3, 1970, 14848/70
Int. Cl. H05b 1/00; A61h 37/00
U.S. Cl. 219—365 4 Claims



An electrically heated sauna bath unit has a plurality of electrical heating elements in the form of a flattened helix surrounded by a jacket which defines therewith an air passage through which air heated by the elements flows. The elements define a space forming a substantially vertical column for accomodating a mass of stone material which accumulates heat against a time when water is thrown thereon. The column has a length which is at least twice its width and a width which is about four times the average size of the stone constituting the stone material. In one embodiment the stone material is in direct contact with the heating elements and is divided by vertical plates secured to the elements and extending the full height of the column. In a second embodiment, the stone material is accomodated in a magazine for indirect heating by the elements.

3,786,232

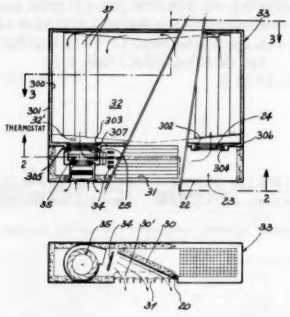
APPARATUS FOR THE CHARGING AND DISCHARGING OF STORAGE HEATERS

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Continuation-in-part of Ser. No. 100,341, Dec. 21, 1970, abandoned, which is a continuation of Ser. No. 778,556, Nov. 24, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 335,780
Claims priority, application Austria, Nov. 27, 1967, 10665/67
Int. Cl. H05b 1/00; F24h 7/04
U.S. Cl. 219—365 7 Claims

A storage heater includes a thermally insulated double walled casing having a closed top portion surrounding a heat storage element provided with vertical air passages. The casing bottom has an air inlet and outlet whereby heated air may be circulated through the passages to heat the storage element in a first mode of operation and whereby room air can be likewise circulated to withdraw heat therefrom in a second mode of operation. A blower, positioned in a compartment having an air inlet and outlet and located beneath the casing, has its suction side in communication with the casing outlet. A pivotal flap valve near the delivery zone of the blower establishes a closed air circulation circuit through the air inlet, casing, air outlet, blower and compartment during the first mode of operation and diverts circulated air outwardly of the

compartment to the exterior thereof during the second mode of operation. An electric heater is located in the compartment



adjacent the delivery zone of the blower to heat the circulated air during the first mode of operation.

3,786,233

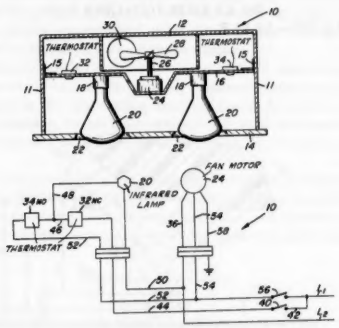
INFRARED HEATER AND VENTILATOR UNIT

Ward H. Bumpus, and Justin Brehm, both of Fayetteville, N.C., assignors to Fasco Industries, Inc., Rochester, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,766

Int. Cl. H05b *1/02;* **F21v** *29/00;* **F24f** *7/00*

U.S. Cl. 219—343 **6 Claims**



An infrared heater-ventilator unit comprises a housing adapted to be mounted in the ceiling of a room with the front of the housing substantially flush with the ceiling. Two infrared lamps are mounted on the front side of a strap that extends transversely across the housing. A motor and fan are mounted on the rear of the strap. The unit is wired so that one or both lamps may be illuminated by closing separate manually-operable switches. A normally-open thermostatic switch closes, if the temperature in the unit reaches a predetermined level, to actuate the motor to drive the fan to draw air into the housing through a front opening and vent it through a rear opening. If the temperature in the unit exceeds this level a normally-closed thermostatic switch opens to break the circuit to the lamps and motor. A separate manually-operable switch permits closing the circuit to the motor to drive the fan, if it is only desired to ventilate the room.

3,786,234

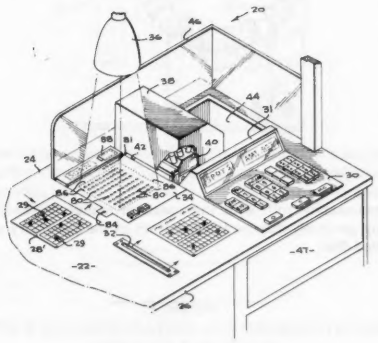
GAME CONTROL AND DATA HANDLING SYSTEM

Edward J. Trent, Reno, Nev.; Lavern H. Meyers, Newport Beach, Calif.; Frank L. Kagele, Reno, Nev.; Jerry T. Fridenberg, Westminster, and Frederick J. Alberty, Hollywood, both of Calif., assignors to Intercontinental Services, Inc., Sparkes, Nev.

Filed Nov. 16, 1971, Ser. No. 199,176

Int. Cl. G06k *3/02;* **A63f** *7/00;* **G06f** *3/06*

U.S. Cl. 235—61.7 R **21 Claims**



A system is disclosed for expediting and monitoring customer transactions in the game of keno including a plurality of transaction terminals or stations each including scanner means for sensing marked number spots of a customer marked keno ticket, a manually operable keyboard for receiving entries of the price of a transaction and the nature of the transaction and a duplicate receipt ticket providing means including printing means controlled by the scanner and the keyboard for rapidly providing a duplicate ticket with brush mark replicas in the same number spots as those of the customer marked ticket and for also imprinting additional information such as the nature and price of the transaction. Another aspect of the invention resides in the provision of a control and data processing system interconnecting the plurality of terminal stations to a central control for controlling and monitoring all of the transaction terminals and storing all transactions of all transaction terminals. An additional feature resides in the provision of a back printer for imprinting the back of a customer marked ticket with all information, such as the amount of the transaction and the nature of the transaction, imprinted on the receipt ticket.

3,786,235

PROGRAM READING MECHANISM

Heinz Strecke, Lindenbaumstrasse 13, 565 Solingen, Germany

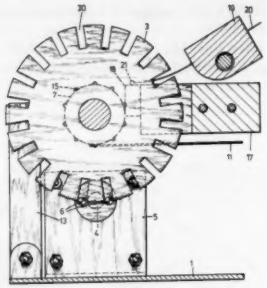
Filed July 6, 1971, Ser. No. 160,052

Int. Cl. G06k *7/06;* **H04k** *15/18;* **H01h** *43/08*

U.S. Cl. 235—61.11 A **15 Claims**

A program reading mechanism in which a band shaped exchangeable program carrier is moved in increments by a transportation roll, with the data carried by the program carrier being scanned by contacts, and the transportation roll being driven by two flights connected to one another rotating about a common center and arranged diametrically in relationship to

the common center, the flights engaging in radial slots provided for the periphery of a slotted disc connected to the



transportation roll, with the common center of the flights being generally disposed at the level of the periphery of the slotted disc.

3,786,236

PROGRAMMED SIGNAL GENERATING APPARATUS

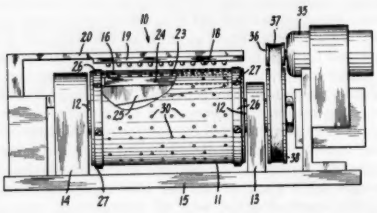
Yukihiro Sato, and Toshiju Ichinosawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,947

Claims priority, application Japan, Dec. 24, 1970 45/129831

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 E **3 Claims**



Programmed signal generating apparatus comprises a plurality of record mediums each containing punched holes arranged according to a predetermined program, a rotary drum having a transparent cylindrical surface having means for releasably connecting one of the record mediums around the drum such that the punched holes overlie the transparent cylindrical surface, and electro-optical reading means for optically reading the punched holes during rotational movement of the record medium and generating corresponding electrical output signals. The electro-optical reading means comprises an array of miniature lamps positioned exteriorly of the drum and in spaced-apart relationship from the drum and a similar array of light-sensitive devices disposed interiorly of the drum each positioned in alignment with one of the miniature lamps to receive light therefrom and operable to generate an electrical output signal in dependence upon the amount of light impinging thereon.

3,786,237

MECHANICALLY READABLE SYSTEM USING PREMARKED SUBSTRATE

Robert H. Postal, 93 Rutgers Pl., Passaic, N.J.

Continuation of Ser. No. 105,979, Jan. 12, 1971, abandoned, which is a continuation of Ser. No. 560,321, June 24, 1966, abandoned. This application Mar. 13, 1972, Ser. No. 234,430

Int. Cl. G06k *7/10, 19/06, 9/18*

U.S. Cl. 235—61.11 E **5 Claims**

STYLIZED NUMERIC CHARACTERS FOR NBF INK ENCODING, USING 4 INKS PRINTED IN BANDS

An encoding means comprising a substrate having a plurality of repetitive patterns, each having a plurality of areas of different photoluminescent material and each area overprinted with stylized alphanumeric characters or coded patterns of opaque ink.

3,786,238

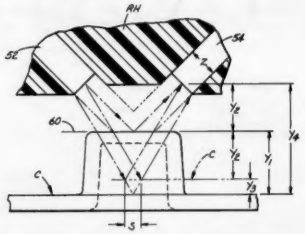
OPTICAL READER

Donald N. Heisner, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Sept. 5, 1972, Ser. No. 286,379

Int. Cl. G02b *5/14;* **G06k** *7/10*

U.S. Cl. 235—61.11 E **5 Claims**



An optical information recognition system for sensing information carried on an information carrying member having an information carrying surface exhibiting a normal surface level and having information carried thereon as raised surface areas. The reader includes light transmitting means, such as an array of fiber optic tubes, for transmitting light along a given acute angle of incidence relative to the member so as to illuminate a portion thereof. Light receiving means, such as an array of fiber optic tubes leading to one or more light sensors, serves to receive light reflected from the member and to provide an output indication only when the amount of received light exceeds a given level. This is accomplished by positioning the light receiving means relative to the light transmitting means and the information carrying member so that the given amount of light is received only when a raised surface area is illuminated by the light transmitting means.

3,786,239
PROGRAMMING APPARATUS

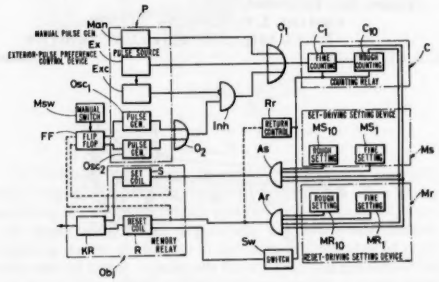
Noboru Sano, and Yoshihide Bando, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 17, 1971, Ser. No. 143,977

Claims priority, application Japan, May 18, 1970, 45/42577; May 18, 1970, 45/42578

Int. Cl. H03k *21/32*

U.S. Cl. 235—92 PE **10 Claims**



A plurality of memory relays have their respective set coils connected in series with and between channel terminals of a first rough setting matrix and a first fine setting matrix, and have their respective reset coils connected in series with and between channel terminals of a second rough setting matrix and a second fine setting matrix. The timing terminals of the first and second rough setting matrices are connected to the output terminals of a rough counting relay and the timing terminals of the first and second fine setting matrixes are connected to the output terminals of a fine counting relay. These counting relays are supplied with clock pulses for counting operation by means of a clock pulse source.

Each memory relay is driven to a set state in response to an output provided at a corresponding channel terminal at a time point preset in the first setting matrixes and is driven to a reset state in response to an output provided at a corresponding channel terminal at a time point preset in the second setting matrixes.

Means for controlling the pulse repetition frequency of the clock pulse and for returning said counting relays and memory relays are provided and frequency control and return operation are controlled advantageously by means of said memory relays.

3,786,240
PRESETTABLE SUBTRACTING COUNTER

Horst Pfeiffer, Aldingen Kreis Tuttlingen, Germany, assignor to Firma J. Hengstler K.G., Aldingen Kreis Tuttlingen, Germany

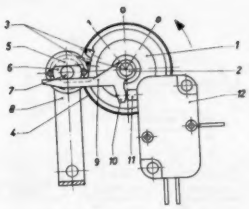
Filed Dec. 18, 1972, Ser. No. 316,287

Claims priority, application Germany, July 22, 1972, P 22 36 098.1

Int. Cl. G06f *15/18*

U.S. Cl. 235—132 R **11 Claims**

A digit wheel is adapted to be preset to a preset position corresponding to a count higher than zero and to perform a rotational subtracting movement from said preset position to and beyond a position corresponding to a zero count. A cutoff pinion is operatively connected to said digit wheel and arranged to rotate to a signaling position in response to a subtracting movement of said digit wheel beyond said position corresponding to a zero count. A signaling lever is movable between a signaling position and a non-signaling position. Biasing means resiliently urge said signaling lever to said non-signaling position. A signal generator is under control of said lever and arranged to generate a signal when, and only when, said lever is in said signaling position. Cam means are connected to said pinion for rotation therewith and in direct engagement with said lever and arranged to permit said lever to



assume its non-signaling position when said pinion is in a position other than its signaling position and to move said lever to its signaling position in response to a rotation of said pinion to its signaling position.

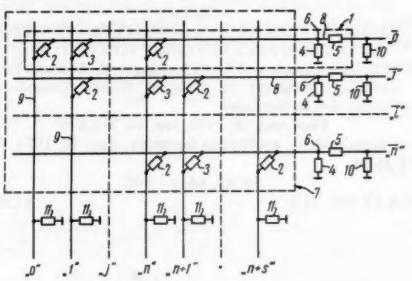
3,786,241
DEVICE FOR INTEGRATING AND DIFFERENTIATING DISCRETE FUNCTIONS

Georgy Evgenievich Pukhov, prospekt Nauki, 111/2, kv. 64; Boris Adamovich Borkovsky, prospekt Nauki, 142/1, Korpus 12, kv. 9; Viktor Kirillovich Belik, ulitsa Vernadskogo, 67, kv. 77; Vladimir Petrovich Romantsov, ulitsa Kolomievskaya, 16, kv. 53, and Alexandr Fedorovich Katkov, bulvar Lesi Ukrainki, 28, kv. 252, all of Kiev, U.S.S.R.

Filed Apr. 10, 1972, Ser. No. 242,645

Int. Cl. G06g *7/18*

U.S. Cl. 235—183 **2 Claims**



A device for performing one of integrating and differentiating discrete functions, arranged on the basis of reversible adders a number of which is equal to a number of points defining the discrete function, each of the reversible adders comprises at least four reactance components having a common connection point whose self admittance is zero, while each two reactance components of all said reversible adders are combined in a rectangular matrix, each third reactance component of all adders being connected to one of the rows or horizontal buses of said rectangular matrix, each fourth reactance components being connected between one of the horizontal buses of the matrix and the ground.

3,786,242

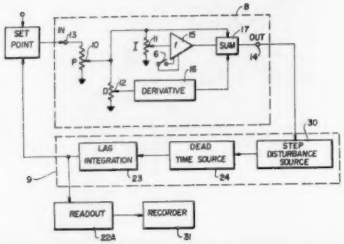
PROCESS CONTROL SIMULATOR

Herbert B. Brooks, 600 Washington Ave., Haddonfield, N.J.

Filed Sept. 23, 1971, Ser. No. 183,010

Int. Cl. G06g *7/66*

U.S. Cl. 235—184 **17 Claims**



A process control simulator contains electronic circuits for modifying set-point control signals by summing, integrating, differentiating and introducing step functions on continuous, single or periodic bases to determine off-line the behavior of a process control system. Provisions are made for several interacting control loops, for dead-time delays and for faster than actual response times to speed up simulation. The dead-time delays are provided by scanning a set of storage capacitors with a variable speed scanning motor through a scanning control cycle of operation.

A three control loop controller section provides for setting the gain of the controller system and controlling integration and difference modes responsive to step disturbances introduced into an integration process after a selectable dead-time adjustment. The output signal is reproduced in the form of a process response waveform. Provisions are made for smoothing readout and responding to sluggish systems by a slow sampling technique.

An automatic zero adjust circuit is provided to compensate for drift once each operation cycle and is controlled by a logic circuit.

3,786,243

LIGHT FIXTURE HAVING GIMBALLED OPEN RING CARRYING FOCUSED LIGHT PIPE OUTLETS

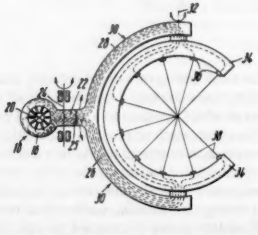
Karl F. Ilzig, Hanau, and Klaus Junginger, Rodenbach, both of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed Aug. 18, 1972, Ser. No. 281,675

Claims priority, application Germany, Aug. 18, 1971, P 21 41 351.4

Int. Cl. A61g *13/00*

U.S. Cl. 240—1.4 **6 Claims**



A light fixture for a hospital operating room comprises an open circle light outlet ring gimballed within a pivotable yoke. One or more light sources are provided which feed a plurality of light pipe whose outlets are disposed around the inner periphery of the ring. The outlet ends of the light pipes are inclined with respect to the horizontal plane to focus the light toward the center of the area beneath the ring. The light sources may be disposed behind the yoke pivot to provide a counterweight, or within the ring in order to shorten the length of the light pipes.

3,786,244

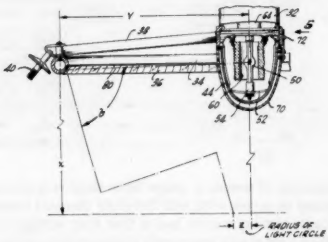
SURGICAL LAMP

Charles G. Hutter, III, Hollywood, Calif., assignor to Physical Systems, Inc., Hollywood, Calif.

Filed Oct. 2, 1972, Ser. No. 293,930

Int. Cl. A61g *13/00;* **F21v** *33/00;* **A61b** *1/06*

U.S. Cl. 240—1.4 **6 Claims**



A lamp of the type used in surgical operating rooms comprising a Fresnel lens surrounding a light source for forming a substantially plane beam, a lens having vertically extending cylindrical lenticulations thereon surrounding the Fresnel lens for dividing the plane beam into a multiplicity of outwardly extending beams, and a plurality of reflectors mounted on a ring which surrounds the lenticular lens for reflecting the outwardly extending beams to form a cone of light.

3,786,245

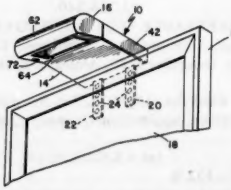
CORDLESS ILLUMINATION APPARATUS

Donald J. Cincotta, 7330 Brodiaea, La Jolla, Calif., and Harold J. Kopelke, 1511 Beryl, San Diego, Calif.

Continuation-in-part of Ser. No. 168,637, Aug. 3, 1971, abandoned. This application Oct. 27, 1972, Ser. No. 301,326

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 AD **2 Claims**



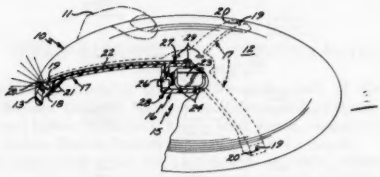
Illumination apparatus utilizing a removable and rechargable battery to eliminate the requirement for electrical outlets and to eliminate exposed electrical cords in providing illumination for pictures and other works of art. The apparatus includes a vertical mounting bracket and a source of illumination. A battery is received within the horizontal support for said source of illumination to maximize the volume available for batteries without detracting from the overall appearance of the apparatus. The source of illumination is angularly disposed to direct light downwardly and inwardly toward the vertical mounting surface and the picture or other work of art.

3,786,246

ILLUMINATED FLYING SAUCER

Stephen C. Johnson, 814 Cartegena St., and Jesse C. Ward, 7 LaLinda Dr., both of Long Beach, Calif.

Filed Mar. 24, 1972, Ser. No. 237,767
Int. Cl. A63h 1/32
U.S. Cl. 240—6.4 R 16 Claims



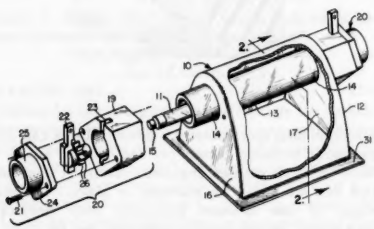
A "Frisbee" type flying saucer toy which has a generally disc-shaped body terminating at its periphery in a downwardly pointing rim so that the body and rim define a generally convex upper surface and a generally concave lower surface. Lighting means, preferably in the form of a plurality of regularly spaced lamps, is generally fixedly disposed proximate the rim so as to be visible when energized from the outside of the rim. A battery holder is generally centrally located on the body, preferably on the underside thereof, and electrical conductors extend generally radially outwardly along the body from the battery holder to the lights. The battery holder, lights, and electrical conductor means are all embodied in a unitary structure having a central hub in which the battery holder is located, with a plurality of regularly spaced arms extending radially outwardly from the hub, with the lights located at the ends of the arms, and the electrical conductor extending along the arms. This unitary structure is adapted to be engaged in the concave underside of the flying saucer. The centrally located battery holder and the peripherally located lights present a minimum interference with the aerodynamic characteristics of the saucer, so that good flight characteristics are retained.

3,786,247

OPTICAL ILLUMINATION SYSTEM

Richard L. Eilert, Palatine, and John J. Klemenz, Mount Prospect, both of Ill., assignors to Chicago Aerial Industries, Inc., Village of Barrington, Ill.

Filed Nov. 29, 1968, Ser. No. 780,124
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 7 Claims



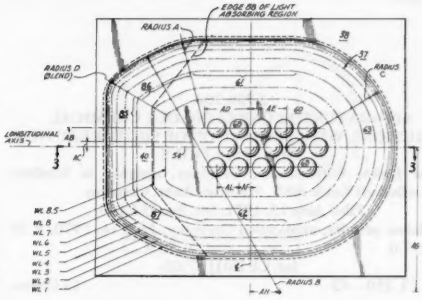
An optical illumination system for aerial electronic flash photography which employs one or more illumination modules each of which includes a cylindrical light source and a unique trough-like reflector configuration for providing weighted distribution of emitted light to compensate for attenuation factors such as slant range and lens optical fall-off.

3,786,248

LUMINAIRE

Wayne W. Compton, Irvine, Calif., assignor to Kim Lighting, Inc., City of Industry, Calif.

Filed May 15, 1972, Ser. No. 253,591
Int. Cl. F21s 1/10, 3/10, 13/10
U.S. Cl. 240—25 32 Claims



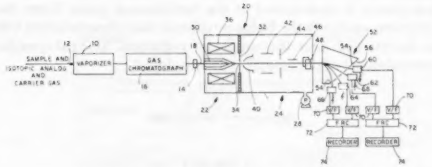
A luminaire comprising a lamp and a reflector. The lamp has an axis of radiation and the property of emitting a disproportionately large percentage of its luminous flux in an annulus which is contained within a pair of imaginary divergent conical surfaces, each at no more than about 50° to the axis of radiation (100° included angle). The reflector includes reflective cap, side and end surfaces which together form a cavity in which the lamp is placed. The cavity has a plane of symmetry. A longitudinal axis and the axis of radiation lie in the plane of symmetry. The axis of radiation intersects the longitudinal axis at an acute angle. The side and end surfaces are, in cross-section, beaming-directing, and preferably are at least approximations to parabolas, and the flux radiated from the lamp within said annulus impinges upon each of these surfaces.

3,786,249

NEGATIVE ION DUOPLASMATRON MASS SPECTROMETER FOR ISOTOPE RATIO ANALYSIS

Michael Anbar, and William H. Aberth, both of Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 20, 1971, Ser. No. 209,528
Int. Cl. H01j 39/28
U.S. Cl. 250—41.9 G 21 Claims



A technique for performing isotope ratio analysis is described which utilizes a negative ion mass spectrometer coupled with a negative ion duoplasmatron source. An untreated sample to be analyzed for a specific compound is diluted with a known amount of isotopic analog. The sample plus analog is volatilized if necessary, and purified by gas chromatography before entering the ion source. The extremely hot plasma of the duoplasmatron thoroughly fragments the large molecules and efficiently ionizes the input gas stream. The resulting ionized stream is analyzed in a magnetic mass spec-

trometer. The signals from a pair of peaks representing the common and noncommon tag isotope of the same element are converted to frequency signals and the frequency signals are converted to a ratio signal by a frequency ratio counter. The value of this ratio then indicates the precise amount of compound in the sample. The system operates very efficiently on stable, non-radioactive isotopes and is applicable to many analyses which cannot be performed with radioactive isotopes.

3,786,250

APPARATUS FOR CARRYING OUT CHEMICAL REACTIONS, WITH FORMATION OF PHOTOREACTION PRECIPITATIONS

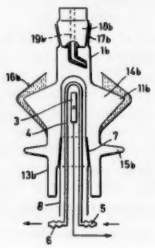
Horst Huhn, Witten-Ruhr, Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim/Ruhr, Germany

Filed June 15, 1971, Ser. No. 153,196

Claims priority, application Germany, June 16, 1970, P 20 29 597.0

Int. Cl. H01j *37/00*

U.S. Cl. 250—43 **14 Claims**



An assembly for effecting chemical reactions in solutions by radiation comprises a means providing a source of radiation and a reaction vessel rotatably mounted therearound. The reaction vessel is used to contain the solution to be treated by radiation. The vessel includes a bulge portion which extends radially outwardly for holding the solution at a location for exposure to the radiation. When a precipitate is formed upon exposure to the radiation during the rotation of the vessel, the precipitate is maintained at the furthermost point from the radiation source in the bulge portion so that clear solution will be maintained near the source of radiation. Several specific embodiments of the assembly are disclosed.

3,786,251

BULK MATERIAL NUCLEAR MOISTURE GAUGING SYSTEM

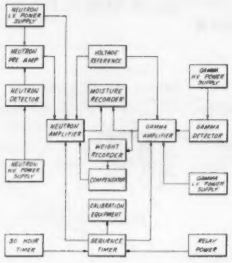
Donald H. Kylin, and Thomas E. Reim, both of Cleveland Heights, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 34,730, May 5, 1970, abandoned. This application Feb. 2, 1972, Ser. No. 222,967

Int. Cl. G01n *23/12*; **G01t** *3/00*

U.S. Cl. 250—43.5 D **6 Claims**

An improvement on a moisture gauging system of the type disclosed in Stone et al. U.S. Pat. No. 3,431,415, issued Mar. 4, 1969, in which slow neutrons are sensed to provide an indication of the moisture and other neutron interacting material content of an irradiation volume of a substance. A compensation circuit is provided to counteract the effect of neutron interacting material in the substance under test.



3,786,252

Patent Not Issued For This Number

3,786,253

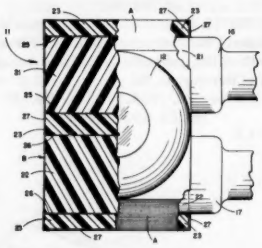
GAMMA AND NEUTRON SCINTILLATOR

James W. Haffner, Hacienda Heights, and Llewellyn S. Pearce, Bradbury, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Feb. 1, 1972, Ser. No. 222,633

Int. Cl. G01j *39/18*

U.S. Cl. 250—71.5 R **5 Claims**



A uni-directional spectrometer is described that can detect and distinguish between gamma ray and neutron fluxes. The scintillator has two parallel disposed cylindrical scintillating elements that are made, for example, of plastic. The plastic compound of one element comprises only protons or hydrogen atoms, having atomic weight one, and the other element is made of a chemically similar plastic compound comprising only deuterium or hydrogen atoms of atomic weight two. The two cylindrical scintillator elements are enclosed within an anti-coincidence or outer scintillator element, with both ends of each cylinder exposed. On the same adjacent ends of each cylindrical element are disposed photomultiplier tubes. On opposite sides of the outer scintillator element are disposed two additional photomultiplier tubes. The cylindrical

elements and the outer element are each, respectively, enclosed in a thin coating of aluminum except where the respective elements are in contact with the photomultiplier tubes to isolate the light output from each element.

3,786,254

THERMOLUMINESCENCE DOSIMETER HAVING A HANDLE

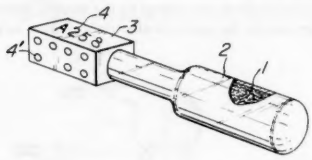
Tadaoki Yamashita; Osamu Yamamoto, both of Hirakata; Hajimu Oonishi, Neyagawa; Hidetsugu Kawabata, Kobe, and Saburo Kitamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 12,238, Feb. 18, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,097

Claims priority, application Japan, Feb. 26, 1969, 44/17908; Feb. 26, 1969, 44/17909; Feb. 26, 1969, 44/17910; Feb. 26, 1969, 44/17911

Int. Cl. G01t 1/11

U.S. Cl. 250—71 R **3 Claims**



A thermoluminescence dosimeter is integrated with a dosimeter-holding member to simplify and assure its handling as well as to prevent the generation of miscellaneous luminescences, for example, a luminescence due to the heat of friction. The reliability of the thermoluminescence dosimeter is thereby greatly improved in measuring dose.

3,786,255

DYE PENETRANT COMPOSITION AND METHOD OF APPLICATION

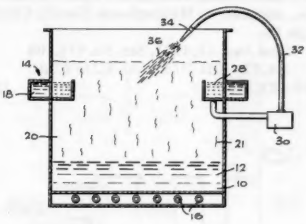
Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 5, 1973, Ser. No. 329,774

Int. Cl. G01n 21/16

U.S. Cl. 250—302 **17 Claims**

Method for detecting cracks and flaws in the surface of an object or part, employing a dye penetrant composition which, following application of the dye penetrant composition to the part surface, includes means for facilitating removal of excess dye penetrant from such surface, in the form of a volatile degreaser-type solvent such as 1,1,1-trichloroethane. According to one embodiment, an object to be inspected is immersed in a dye penetrant which will withstand high temperatures, specifically a dye penetrant containing a wax, for example paraffin wax, a volatile solvent, preferably 1,1,1-trichloroethane, and a dye which is soluble in said volatile solvent, preferably a fluorescent dye, the dye penetrant composition being maintained at the boiling temperature of the volatile solvent, causing melting of the wax, which goes into solution, and vaporization of such solvent into a zone above the heated liquid dye penetrant composition, removing the object from the heated liquid dye penetrant composition, passing the object into the zone containing vapors of the volatile solvent and maintaining the object in the vapor zone for a period sufficient to cause vapors of the volatile solvent contacting and condensing on the surface of the object, to wash excess liquid dye penetrant from the surface of the object back into the liquid dye penetrant composition, together with condensed vapors of volatile solvent, removing and drying the object. The process is conveniently carried out in a degreaser-type apparatus, in which the object is initially passed through the vapors of volatile solvent above the bubbling liquid dye penetrant composition in the bottom of the degreaser, permitting facile removal of any oil or grease from the surface of the object, after which the object is then treated in the liquid dye penetrant composition, then again passed upwardly through the vapors of volatile degreaser solvent to remove excess liquid dye penetrant and dried, as previously noted, following which the dried surface of the object containing dye penetrant including wax in the cracks and defects thereof, with or without application of a developer, can be inspected under appropriate lighting conditions for detection of cracks and flaws.



3,786,256

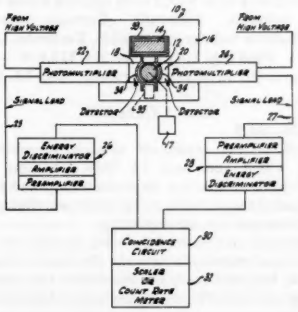
METHOD AND APPARATUS FOR NUCLEAR FUEL ASSAY WITH A NEUTRON SOURCE AND COINCIDENT FISSION NEUTRON DETECTORS

Samuel Untermyer, Portola Valley, Calif., assignor to National Nuclear Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 56,386, July 20, 1970. This application Nov. 18, 1971, Ser. No. 199,902

Int. Cl. G01t 1/20, 3/00

U.S. Cl. 250—71.5 R **15 Claims**



A method and apparatus for the non-destructive assay of nuclear reactor fuels. Neutron irradiation of the fuel emits fis-

sion neutrons and gammas in groups of two to three neutrons and about five gammas for each fission and these neutrons and gammas are detected in a coincident counting system to obtain a quantitative assay of the fissionable species in the fuel. The proportions of various fissile isotopes in a fuel sample are also detected by coincident counting at a plurality of coincidence levels.

3,786,257

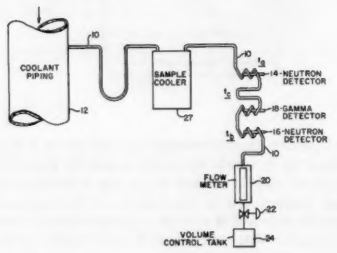
NUCLEAR FAILED FUEL DETECTION SYSTEM

Harald H. Weiss, Vienna, Austria, and Robert J. Johnson, Atlanta, Ga., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 12, 1971, Ser. No. 171,108

Int. Cl. G01t *1/16, 3/00;* **G21c** *17/02*

U.S. Cl. 250—83.3 R **18 Claims**



A system is disclosed which utilizes multiple radiation detectors to establish the isotopic or pseudo isotopic (weighted average of several isotopes) content of radiation sources on a continuous on-line basis. A specific application which utilizes this principle is a failed fuel monitor which continuously monitors the delayed neutron and gamma activity emanating from the primary coolant of a nuclear reactor. Employing two neutron detectors, the system has the ability to distinguish between activity from failed fuel and from fuel rod surface contamination. Applying a technique to compensate for activity build-up in the primary coolant loop, the system makes it possible to interpret the signals even during power transients. The provision of a third detector responsive to the gamma radiation emitted from the primary coolant in the reactor coolant loop enables the system to distinguish between enlarged cladding failures in already failed fuel rods and additional fuel failures.

3,786,258

CLOSED SYSTEM NEUTRON GENERATOR TUBE

Albrecht Schmidt, Karlsruhe, Germany, assignor to Gesellschaft fur Keinforschung mbH, Karlsruhe, Germany

Filed Feb. 1, 1972, Ser. No. 222,639

Claims priority, application Germany, Mar. 13, 1971, P 21 12 215.6

Int. Cl. G21g *3/04*

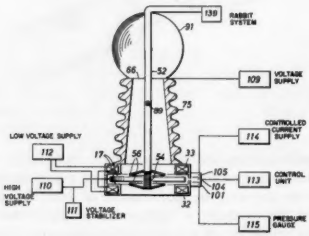
U.S. Cl. 250—84.5 **15 Claims**

A closed system, sealed-off neutron generator tube is described which generates 14 MeV neutrons from the $T(d,n)He^4$ nuclear reaction on a deuterium and tritium absorption loaded target surface onto which accelerated deuterium and tritium gas ions are impinging.

The electrode structure of the tube consists of a magnetic poleface of one polarity, a cathode electrode in front of and adjacent to, but electrically insulated from that poleface and, a non-magnetic metallic anode discharge chamber surrounding the cathode electrode in vacuum tight connection with the first magnetic poleface which chamber ends in a full-width opened emission aperture, the rim of which constitutes another magnetic poleface. An acceleration electrode aperture whose cross-section corresponds and is adjacent to the emission aperture constitutes a short and wide acceleration gap. A target electrode opposite to the cathode electrode beyond the acceleration gap is electrically connected to the acceleration electrode and its surface is prepared with a tritium and deuterium absorbed target sheath. A magnetic field of about 1,000 – 2,000 Oe is applied by outside current windings. The path of the magnetic field emerges from the poleface behind the cathode electrode, intersects the latter, spreads along the anode discharge chamber and declines laterally in the region of the emission aperture so as to enter the poleface at its rim. A magnetic yoke outside of the windings serves to close the magnetic path between the polefaces of either polarity.

The target and acceleration electrode potential is maintained at about 100 – 300 kV, while the potential of the cathode electrode is maintained at about 10 – 30 kV, both potentials being applied with a negative polarity with respect to the anode discharge chamber by means of appropriate feedthrough insulators. Forced water flow cooling is provided for the electrodes, part of the vacuum envelope and the magnetic coils.

Positive ions are generated inside the anode discharge chamber by means of a self-sustained low pressure high-voltage cold cathode discharge with the ionizing electrons trapped in a region of crossed magnetic and electric fields. An electron cloud rotating differentially and of nearly uniform density thus ionizes the low pressure tritium deuterium gas mixture. The ions discharged from this region by the electric discharge field are either lost to the cathode electrode or to a larger degree



driven in the opposite direction into the region of the wide emission aperture and enter the continuing electric field of the acceleration gap upon passing the acceleration electrode aperture, these ions obtain a sufficient velocity to release neutrons from the fusion reactions when they finally impinge on the target surface material.

Secondary electrons, released from the target surface by the impinging ions and accelerated in the opposite direction to the ion flow, pass the acceleration gap and the discharge region and must be intercepted by the cathode electrode.

High flux neutron irradiation of samples for activation analysis or production of short-lived radioisotopes is achieved inside a cylindrical target. In this geometry, a fairly uniform neutron flux distribution is produced by bombarding the cylindrical target at its outside with ions generated in an annular discharge region concentric to the target, which ions are accelerated radially inward onto the target. The axially measured width of the ion current density distribution should be comparable to the diameter of the target cylinder.

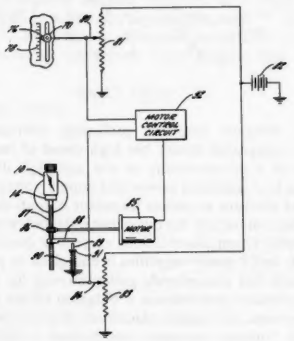
A well collimated neutron beam, with a high dose rate applicable in medical cancer therapy irradiation with fast neutrons, is produced in the axial direction to the target cylinder outside of a thick radiation shield which is equipped with a collimating bore with the cross-section corresponding to that of the target cylinder. Optimum collimation is obtained by a slightly conical target cylinder having the form of a truncated cone with its apex located half-way on the axis along the collimating bore. An inside shielding cone resembling the residual of the target frustrum up to the apex tip is inserted

into the first half of the collimating bore. The latter may be interchangable, thus being either divergent, cylindrical or convergent, depending on the size of the irradiation field to be actually used.

3,786,259
METHOD AND APPARATUS FOR OPTIMIZING MEASUREMENT OF RADIOACTIVITY OF SAMPLES IN SCINTILLATION TYPE COUNTER

Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 7, 1972, Ser. No. 241,988
Int. Cl. G01t *7/08*
U.S. Cl. 250—106 SC **13 Claims**



A method and apparatus for optimizing the measurement of the radioactivity of samples in a scintillation type radioactivity counter in which successive samples are advanced into a counting chamber where the radioactivity of each sample is measured by detecting and counting the scintillations induced in a scintillation medium. In order to optimize the position of the sample relative to the scintillation detecting means, and thereby optimize measurement of the radioactivity of each sample, control means are provided for producing a command signal representing a selected position of the sample relative to the scintillation medium. This control means includes adjusting means for automatically adjusting the stop position of the sample in response to each command signal so that the sample is automatically stopped at a position represented by the command signal, and at which measurement of the radioactivity of the sample is optimized. Specific adjusting means disclosed are in adjustable limit switch and an adjustable wiper on a potentiometer, each of which controls the drive motor for raising and lowering successive samples relative to a counting chamber.

3,786,260
RADIATION ABSORBING SHIELD FOR PERSONNEL AND MATERIALS AND METHOD OF MAKING SAME

Bobby Leroy Atkins, and Robert Niles Bashaw, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

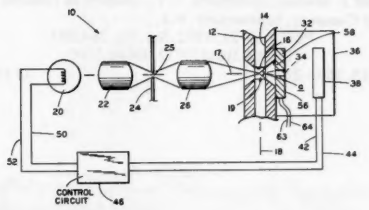
Filed Dec. 30, 1971, Ser. No. 214,394
Int. Cl. G21f *1/00*
U.S. Cl. 250—108 WS **12 Claims**

A radiation absorbing shield is constructed by forming continuous phase gelled aqueous solution, containing suitable dissolved radiation absorbing metal salts between confining walls which may be transparent. This is accomplished by mixing an aqueous solution of a polymerizable monomer, e.g., acrylamide, and an aqueous solution containing a catalyst, e.g., a redox type such as $K_2S_2O_8$-$Na_2S_2O_5$, and a crosslinking agent, e.g., N, N-methylene bisacrylamide or other divinyl monomer. Alternatively a radiation source can be used in place of the free radical and crosslinking monomer solution to accomplish the polymerizing and crosslinking of the monomer.

3,786,261
OPTICAL SCANNING DEVICE

Lorn Kenneth Tucker, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 12, 1971, Ser. No. 188,123
Int. Cl. G01j *1/32*; **G06m** *7/00*; **G01n** *21/26*
U.S. Cl. 250—205 **13 Claims**

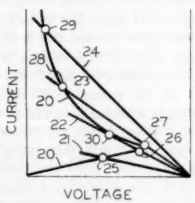


The device includes a novel photosensor having two sides, a photoreceiving surface on one side thereof, and a passageway or hole extending through the photosensor. The photosensor is positioned in the path of a light beam with the hole in alignment with the light beam for passing the same through the photosensor. A flow stream containing particles is directed across the path of the light beam and some of the light deflected (scattered) by the particles impinges on the photoreceiving surface and generates an electrical signal which can be utilized for determining the size, number and/or concentration of particles suspended in the flow stream.

3,786,262
LIGHT SENSING DEVICE

Shigeru Hayakawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed July 20, 1972, Ser. No. 273,462
Claims priority, application Japan, Aug. 12, 1971, 46-61154; Dec. 20, 1941, 46-10510
Int. Cl. H03k *3/31, 3/42, 17/58*
U.S. Cl. 250—206 **2 Claims**



A light sensing device which can act as a light memory device or a light detecting device. The device has a photo-conductive element and a negative resistance element connected in series. At least one I-V curve of the photoconductive element is tangent to the I-V curve of the negative resistance element at one point and intersects the I-V curve of the negative resistance element at a second point. The current and/or voltage of the device changes abruptly upon irradiation of the photoconductive element with light having an intensity slightly greater than or slightly less than the light intensity corresponding to the I-V curve of the photoconductive element

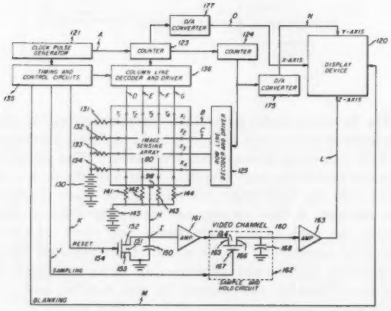
according to whether the I-V curve of the photoconductive element is tangent to the I-V curve of the negative resistance element on the concave downward side or on the concave upward side.

3,786,263

METHOD AND APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READOUT

Gerald J. Michon, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 21, 1972, Ser. No. 264,803
Int. Cl. H01j 39/12; H04n 5/38
U.S. Cl. 250—209 **25 Claims**



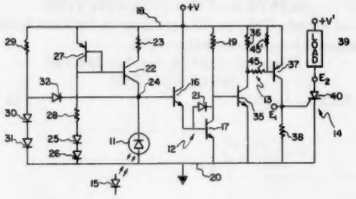
A substrate of semiconductor material of one conductivity type is provided with an insulating member overlying a surface of the substrate and a conducting member overlying the insulating member to form a surface charge storage cell. A capacitor is provided in circuit with a source of operating potentials between the conducting member and the substrate. Switching means in shunt with the capacitor connects the terminals of the capacitor together for one period of time and disconnects them for another period of time. The polarity and magnitude of the voltage applied to the storage cell is such as to produce depletion of majority carriers in a region in the surface adjacent portion of the substrate underlying the conducting member. Exposure of the substrate to radiation generates minority carriers therein which are stored near the surface of the depletion region. Circuit means are provided for changing the potential between the conducting member and the terminal of the capacitor remote from the substrate during the time the terminals of the capacitor are disconnected from one another to inject the stored minority carriers into the substrate whereby a displacement current flows in circuit between the substrate and the capacitor and produces a voltage across the capacitor which is proportional to the minority carriers stored in the depletion region during the time the terminals of the capacitor were connected. A plurality of storage cells such as described above are also provided on a common substrate and each of the cells are addressed in turn to effect injection of the charge stored therein into the substrate and produce respective voltages across a capacitor connected in circuit with the substrate. Means are provided for sampling the voltages developed across the capacitor in turn to provide an output having an amplitude varying with time in accordance with the variation in amplitude of the sample voltages.

3,786,264

HIGH SPEED LIGHT DETECTOR AMPLIFIER

Armand P. Ferro; John D. Harnden, Jr., and Bruno F. Kurz, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,568
Int. Cl. H01j 39/12
U.S. Cl. 250—214 R **16 Claims**



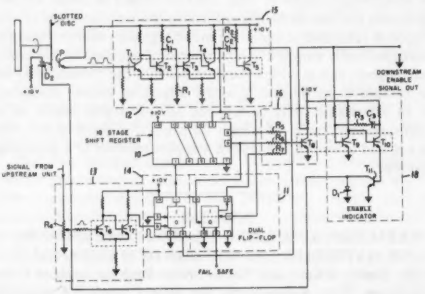
A light detector amplifier preferably fabricated as a monolithic integrated circuit has high speed of response (in the order of 1 microsecond) at low and high illumination levels, uses low quiescent power and supply voltage, and has an optional thyristor or power transistor output. A transistor preamplifier conducts in the quiescent state and reverse biases a photodiode. Upon illumination, current is diverted to the photodiode and a power amplifier is energized to produce an output which can also provide gating current for a thyristor output. Enhanced performance is obtained by the use of special components, and unique placement of components within the circuit. Voltage excursions are limited in the circuit at several points by current steering, pre-biasing and diode clamping techniques.

3,786,265

APPARATUS FOR DETECTING DEFECTS IN CONTINUOUS TRAVELING MATERIAL

Solomon Abilock, Brooklyn, and Richard Shottenfeld, Jamaica, both of N.Y., assignors to Lindly & Company, Inc., Mineola, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,209
Int. Cl. G01n 21/32
U.S. Cl. 250—219 DF **13 Claims**



Apparatus for detecting defects in continuous traveling material comprises two photoelectric detecting units disposed on the path of travel of the material with one unit downstream of the other, and a coordinating circuit between the two units. A signal produced by the upstream unit upon detection of an apparent defect is delayed or stored by a shift register for a period of time required for a defect in the material to travel from one detecting unit to the other. Coincidence of an output signal of the shift register with an output signal of the

downstream detecting unit indicates the presence of an actual defect in the material. A defect signal thereupon produced can be used as desired. For example it can be used to stop the material and can be fed to a counter to provide a record of defects occurring in the material.

3,786,266

METHODS AND APPARATUS FOR DISTINGUISHING BETWEEN BODIES ACCORDING TO THEIR TRANSLUCENCY

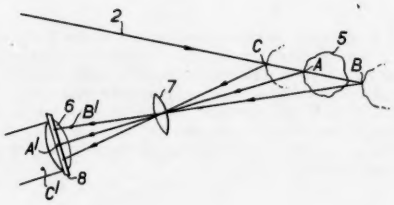
Colin David Reid, Newbury, England, and Ian Daniel Ritchie, Belfast, Northern Ireland, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 6, 1970, Ser. No. 35,198

Claims priority, application Great Britain, May 19, 1969, 25529/69

Int. Cl. G06m *7/00*

U.S. Cl. 250—222 R **20 Claims**



Relatively opaque and relatively translucent bodies are distinguished from one another by illuminating a limited area of the surface of each body and determining the amount of light emitted from the surface of the body outside the limited area, the amount of such emitted light increasing with increasing translucency of the body. A coaxial light-transmitting and light-receiving arrangement is preferred, using a common lens, and using adjacent fibre-optic transmitting and receiving surfaces.

The invention has one application in distinguishing between ore fragments which comprise a translucent matrix (e.g., quartz or quartzite) and greater or lesser amounts respectively of an opaque mineral (e.g., uraninite) non-uniformly dispersed therein, and can be applied to physically separate the fragments according to their mineral content.

3,786,267

METHOD AND APPARATUS

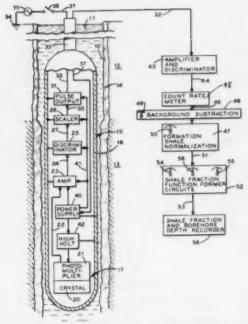
Olive Y. Liu, Danbury, and John S. Wahl, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 808,923, March 20, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,426

Int. Cl. G01t *1/20*

U.S. Cl. 250—256 **11 Claims**

An illustrative embodiment of the invention converts a signal that reflects the natural radioactivity of an earth formation into another signal that is related to the volumetric shale fraction of the formation under observation. Typically, the radiation signal is normalized to a standard formation radioactivity characteristic. The normalized signal then is contrasted with some other physical parameter (e.g., porosity, density) in accordance with the specific mineral composition of the formation in order to produce an output signal that is related to the volumetric shale fraction.



3,786,268

ELECTRON GUN DEVICE OF FIELD EMISSION TYPE

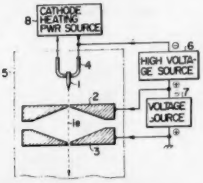
Setsuo Nomura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1972, Ser. No. 243,215

Claims priority, application Japan, Apr. 12, 1971, 46-22338

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 **11 Claims**



In an electron gun device of the field emission type, there is provided a heating power source for supplying a pulsating current to a filament of hair pin shape provided with a cathode tip of needle shape so as to intermittently heat said cathode tip, thereby maintaining a stable electron beam emitted from said cathode tip by means of an electric field applied between said cathode tip and an anode.

3,786,269

METHOD AND APPARATUS OF SCANNING ELECTROMAGNETIC RADIATION USING ROTATING DETECTORS-EMITTERS AND CONTROL CIRCUIT

Erwin E. Cooper, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

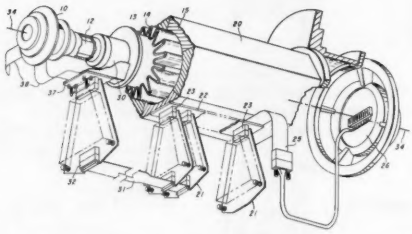
Filed Dec. 17, 1971, Ser. No. 209,329

Int. Cl. G01j *1/00*

U.S. Cl. 250—334 **12 Claims**

An infrared scanning system which does not require the use of scanning mirrors is disclosed. An array of infrared detectors is mounted on a support member. Infrared radiation is focused on the array of detectors by a lens system and the support member is rotated to scan the scene of interest. An array of emitters is mounted on the opposite end of the support member and the electronics necessary to interface the detector array with the emitter array is mounted on the outer sur-

face of the support member. The central portion of the support member also includes a mechanical cryogenic refrigerator for cooling the detector array. In scanning, the complete structure including the detector array, the emitter array, the



electronics interconnecting the emitter, the detector array and the refrigerator are rotated about a common axis by a drive motor. A television camera is focused on the emitter array to produce a TV image of the scene scanned by the array of infrared detectors.

3,786,270

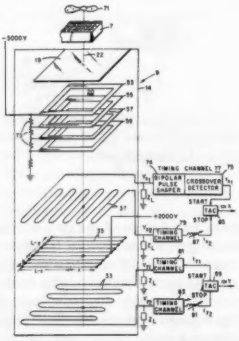
PROPORTIONAL COUNTER RADIATION CAMERA

Casimer J. Borkowski, and Manfred K. Kopp, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,579

Int. Cl. G01t 1/18

U.S. Cl. 250—385 **7 Claims**



A gas-filled proportional counter camera that images photon emitting sources has been provided. A two-dimensional, position-sensitive proportional multiwire counter is provided as the detector. The counter consists of a high voltage anode screen sandwiched between orthogonally disposed planar arrays of multiple parallel strung, resistively coupled cathode wires. Two terminals from each of the cathode arrays are connected to separate timing circuitry to obtain separate X and Y coordinate signal values from pulse shape measurements to define the position of an event within the counter arrays which may be recorded by various means for data display. The counter is further provided with a linear drift field which effectively enlarges the active gas volume of the counter and constrains the recoil electrons produced from ionizing radiation entering the counter to drift perpendicularly toward the planar detection arrays. A collimator is interposed between a subject to be imaged and the counter to transmit only the radiation from the subject which has a perpendicular trajectory with respect to the planar cathode arrays of the detector.

3,786,271

ELECTRON MICROSCOPES AND MICRO-ANALYSERS

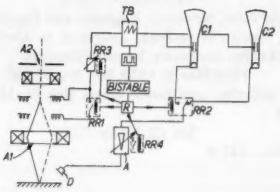
David Charles Joy, Southampton, and Graham Roger Booker, Woodstock, both of England, assignors to Cambridge Scientific Instruments Limited, Cambridge, England

Filed Feb. 14, 1972, Ser. No. 225,968

Claims priority, application Great Britain, Feb. 12, 1971, 4,604/71

Int. Cl. H01j 37/26

U.S. Cl. 250—398 **8 Claims**



In a scanning electron beam instrument also capable of being used to exhibit pseudo-Kikuchi (electron channelling) effects by causing the electron beam to rock angularly or spirally about a substantially fixed point on a specimen surface the electron beam is switched rapidly between the rocking (electron channelling) mode and the linear scanning (micrograph) mode to allow the simultaneous display of information derived from both modes.

3,786,272

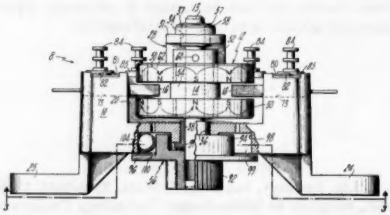
HALL EFFECT ROTARY PULSE GENERATOR

John G. Gamble, Simsbury, and Richard J. Flis, Plantsville, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.

Filed Nov. 3, 1972, Ser. No. 303,355

Int. Cl. G01p 3/48

U.S. Cl. 307—106 **6 Claims**



A rotary electrical pulse generator having a support block, a pair of Hall probes adjustably mounted in diametrically opposed support recesses in the block, a rotor mounted on the block having a pair of axially spaced coaxial magnet rings providing an axial gap receiving the Hall probes to generate electrical signals as the rotor rotates, and a one-way brake mechanism selectively installable for use in preventing rotation of the rotor in a selected direction.

3,786,273

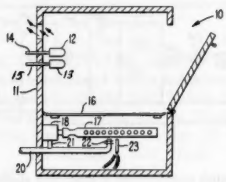
CONTROL APPARATUS

Domenick Saponara, Macungie, Pa., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 168,077, Aug. 2, 1971, Pat. No. 3,754,703. This application Feb. 20, 1973, Ser. No. 334,056

Int. Cl. H01h *47/24*

U.S. Cl. 307—117 **1 Claim**



A control assembly to operate a gas oven. The main burner receives gas from a solenoid valve energized by a thermoelectric generator through a main thermostat switch. In order to reduce the oven temperature to, e.g. 170° F. to keep the food warm after a timer has run down, the timer and a keep-warm thermostat operate two switches, respectively, to short circuit the solenoid or the thermoelectric generator periodically. The thermoelectric generator output is in the millivolt region. Thus, use of one or two additional, inexpensive, series switches in the circuit can make solenoid operation unreliable because of even moderate contact resistance. Even the use of expensive gold may not avoid the series switch problem. The control assembly disclosed herein avoids this problem by use of a disabling shunt instead of a series switch.

3,786,274

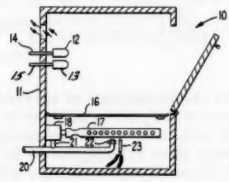
CONTROL APPARATUS

Domenick Saponara, Macungie, Pa., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 168,077, Aug. 2, 1971, Pat. No. 3,754,703. This application Feb. 20, 1973, Ser. No. 334,057

Int. Cl. H01h *47/24*

U.S. Cl. 307—117 **2 Claims**



A control assembly to operate a gas oven. The main burner receives gas from a solenoid valve energized by a thermoelectric generator through a main thermostat switch. In order to reduce the oven temperature to, e.g. 170° F. to keep the food warm after a timer has run down, the timer and a keep-warm thermostat operate two switches, respectively, to short circuit the solenoid or the thermoelectric generator periodically. The thermoelectric generator output is in the millivolt region. Thus, use of one or two additional, inexpensive, series switches in the circuit can make solenoid operation unreliable because of even moderate contact resistance. Even the use of expensive gold may not avoid the series switch problem. The control assembly disclosed herein avoids this problem by use of a disabling shunt instead of a series switch.

3,786,275

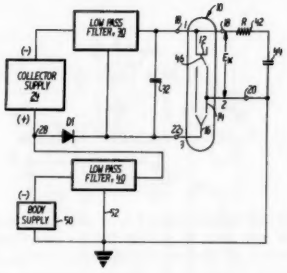
CIRCUIT AND METHOD FOR ARC PROTECTION OF LINEAR BEAM DEVICES

Arden L. Quesinberry, Towson, and Edward J. Lawson, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1972, Ser. No. 276,290

Int. Cl. H01h *9/30*

U.S. Cl. 307—136 **12 Claims**



A method and circuit for protecting a linear beam device such as a klystron from damage due to cathode-to-body member arcing. The linear beam device is supplied with body member and collector electrode voltages from serially connected power supplies which are both referenced to the cathode electrode. A diode poled to block current flow away from the collector electrode is provided between the collector electrode and the interconnection or junction between the power supplies. The diode thus prevents high current flow from the collector supply resulting from a cathode-to-body member arc.

3,786,276

INTERFERENCE SUPPRESSION DEVICE FOR LOGIC SIGNALS

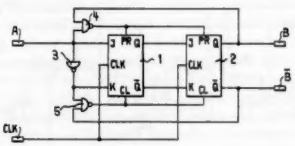
Eduard Rosch, Le Locle, Switzerland, assignor to Dixi S.A., Le Locle, Switzerland

Filed Jan. 7, 1972, Ser. No. 216,068

Claims priority, application Switzerland, Jan. 22, 1971, 974/71

Int. Cl. H03k *19/08, 3/12*

U.S. Cl. 307—208 **1 Claim**



An interference suppression device for logic signals including two logic units in series with periodically controlled storage of an information signal and later transmission thereof to an output terminal, and at least one regenerating circuit which when supplied with identical information at its inputs switches the units to a definite state thus maintaining an information signal at the output of the suppression circuit.

3,786,277

CIRCUIT ARRANGEMENT OF MOS TRANSISTORS OPERATING ACCORDING TO THE DYNAMIC PRINCIPLE FOR DECODING THE ADDRESSES FOR AN MOS MEMORY

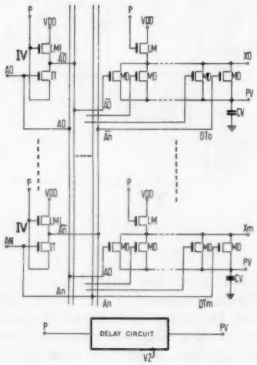
Paul-Werner V. Basse, Nantwein, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 1, 1972, Ser. No. 249,416

Claims priority, application Germany, July 22, 1971, P 21 36 771.5

Int. Cl. G11c *11/40*; H03k *5/00*

U.S. Cl. 307—238 2 Claims



A dynamic decoding circuit arrangement employs a delay circuit for delaying the trailing edge of clock pulses and applying the clock pulses to the individual decoding circuits so that only one of the decoding circuits is effective to emit a memory access signal in accordance with the applied address.

3,786,278

ELECTRONIC SWITCHING APPARATUS

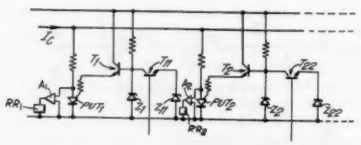
Joseph Colin Whitehouse, Blaby, and Colin Arthur Wild, Leicester, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jan. 31, 1972, Ser. No. 222,178

Claims priority, application Great Britain, Feb. 11, 1971, 4437/71

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 F 5 Claims



A switching circuit for enabling a selected one of a number of channels. The circuit includes a number of devices, one for each channel, each having a voltage/current characteristic with a negative-impedance region separating two stable states. The devices are fed in parallel from a source of constant current or constant voltage of a magnitude such that only one may assume one of the stable states. The devices may be for example programmable unijunction transistors or tunnel diodes.

3,786,279

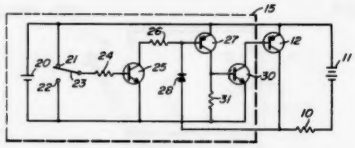
ADAPTIVE TRANSISTOR SWITCH

William J. Wilson, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 30, 1972, Ser. No. 258,027

Int. Cl. H03k *17/60*

U.S. Cl. 307—254 7 Claims



A transistor switch connecting a load to a suitable source of power with amplifying means supplying base current to the transistor switch with a voltage sensitive device, such as a diode or a transistor, connected to sense the voltage across the transistor switch and provide an alternate path for driving current to the amplifier to maintain base current into the transistor switch at a predetermined ratio relative to current flowing through the transistor switch and the load.

3,786,280

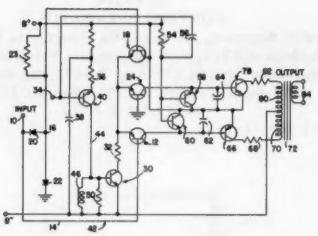
PULSE SAMPLING AND RESHAPING CIRCUIT

Frederik Nordling, Sausalito, Calif., assignor to Lynch Communication Systems, Inc., San Francisco, Calif.

Continuation of Ser. No. 21,442, March 20, 1970. This application Dec. 20, 1971, Ser. No. 210,094

Int. Cl. H03k *17/00*

U.S. Cl. 307—268 4 Claims



In a system for the transmission of information coded in terms of the presence and polarity of pulses in a signal pulse train, a circuit for reconstituting degraded pulses comprising a source of degraded input pulse signals to be sampled and reshaped and diode means connected back-to-back between the input signal source and a point of zero potential. Means is provided for maintaining at least one or the other of the diode means in forward biased condition at different potentials of the input pulse signals. First, second and third transistor means are also provided with means connecting the control element of the first transistor means to the input signal source. Means is provided for connecting the control element of the second transistor means to the point of zero potential and means is provided for connecting the control element of the third transistor means to the interconnection of the diode means. The transistor means is connected so as to cause only the transistor means with the highest potential at its base to conduct and sampling pulse source means is connected to the transistor means so as to prevent conduction of any of said transistor means except in the presence of a sampling pulse. Finally, the first transistor means conducts during the sampling pulse when the potential of the input signal pulse at the

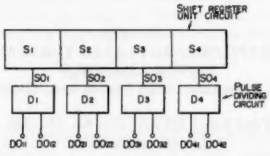
moment of sampling is more positive than a predetermined positive threshold value, the second transistor means conducts when the input signal potential is more negative than a predetermined negative threshold value, and the third transistor means conducts when the input signal potential is between the threshold values, these threshold values being determined by the voltage drop across the diode means.

3,786,281

SCANNING PULSE GENERATOR

Norio Koike, Kokubunji, and Mikio Ashikawa, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,814
Claims priority, application Japan, Dec. 22, 1971, 46/103695
Int. Cl. H03k *5/00, 5/156*
U.S. Cl. 307—269 **6 Claims**



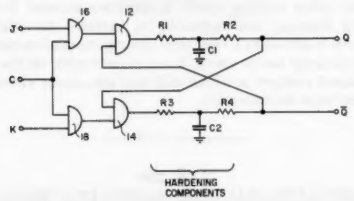
A scanning pulse generator comprising shift register means for producing pulses with a time delay and a circuit for dividing each of the delayed pulses into a plurality of pulses.

3,786,282

RADIATION HARDENED FLIP FLOP

Ross M. Orndorff, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 75,396, Sept. 25, 1970, abandoned.
This application June 16, 1971, Ser. No. 153,680
Int. Cl. H03k *19/36, 3/286*
U.S. Cl. 307—291 **7 Claims**



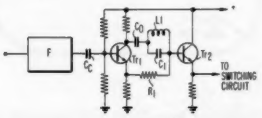
A semiconductor flip flop capable of operating before, during and after an ionizing radiation environment. The radiation hardening is achieved by use of a capacitive memory in the cross coupled feedback loop of the flip flop circuit to drive the flip flop back to its pre-irradiation state.

3,786,283

DELAY CIRCUIT FOR PROVIDING A VARIABLE DELAY CHARACTERISTIC

Hiroshi Iida, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,653
Claims priority, application Japan, Dec. 29, 1970, 45/121491
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **5 Claims**



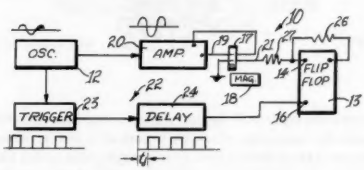
A delay circuit consists of a Toulon circuit one branch of which is a reactance circuit having at least one resonance point and one anti-resonance point wherein the resonance and anti-resonance points are chosen to provide a desired delay characteristic.

3,786,284

SOLID STATE SWITCH CONTROL CIRCUIT

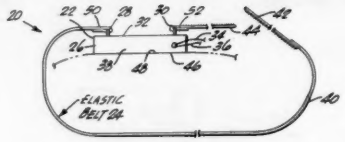
Keith A. Engstrom, River Grove, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Feb. 8, 1973, Ser. No. 330,704
Int. Cl. H03k *17/00*
U.S. Cl. 307—314 **7 Claims**



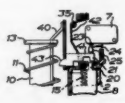
The embodiment of the invention disclosed herein is directed to a solid state switch control circuit which includes a pulsating voltage source and a switching circuit. A saturable closed loop magnetic core structure is associated with drive and sense wires which are connected between the pulsating voltage source and the switching circuit. Actuating signals are coupled to the switching circuit when the closed magnetic core structure is sufficiently magnetically unsaturated to provide transformer coupling between the drive and sense wires. A time delay signal is provided at the clock input terminal of the switching circuit to cooperate with the input signals for actuating the switching circuit only during synchronized pulses at the input. A feedback resistor is provided between the output of the switching circuit and the input thereof to lock the switching circuit in its switched condition until the input signals thereof drop below a minimum voltage which is substantially less than the actuating voltage to provide an electronic hysteresis.

3,786,285
MOMENT ACTUATED TRANSDUCER
Robert C. Reibold, 12062 Brookhaven Pk., Garden Grove, Calif.
Division of Ser. No. 146,156, May 24, 1971. This application Dec. 8, 1972, Ser. No. 313,537
Int. Cl. H04r 17/00
U.S. Cl. 310—8.5 3 Claims



A moment-actuated transducer unit mounted to an elastic belt having Velcro-type fastener means for attaching the belt and transducer unit snugly around the chest or abdomen region of a subject's body provides a highly sensitive and easily installed respiration transducer assembly. The output of the transducer unit can be connected directly to a high input impedance recorder or to a signal conditioning circuit which includes an unfiltered output and a high frequency filtered output wherein a regular high input impedance recorder can be selectively connected to either of such outputs.

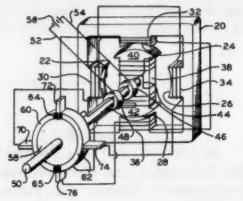
3,786,286
SELF-INTERRUPTING RECIPROCATING MOTOR
Sven Gunnar Palsson, and Olav Conny Mickelsson, both of Hestra, Sweden, assignors to Isabergs Verkstads AB, Hestra, Sweden
Filed Sept. 14, 1972, Ser. No. 289,081
Int. Cl. H02k 33/10
U.S. Cl. 310—34 4 Claims



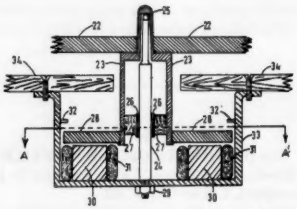
Electrically operated stapler, nailer or the like comprising a solenoid the armature of which is part of a piston means and which provides a driving force for a staple, nail or the like, circuit means for supplying at least part of the half periods of an alternating current to said solenoid as long as a switch is actuated and means for inhibiting actuation of said switch by manually actuable means in a stroke of said piston means and until release of the last named means for renewed actuation thereof.

3,786,287
DIRECT CURRENT MOTOR SYSTEM
Jesse J. Stein, 115 Trinity Pl., Syracuse, N.Y.
Continuation-in-part of Ser. Nos. 866,091, Oct. 6, 1969, Pat. No. 3,631,273, and Ser. No. 678,730, Oct. 27, 1967, abandoned. This application Dec. 27, 1971, Ser. No. 212,381
Int. Cl. H02k 37/00
U.S. Cl. 310—46 3 Claims

A direct current rotary apparatus of the type disclosed in U.S. Pat. No. 3,631,273, of which the present disclosure is a continuation-in-part, the improvement comprising a commutator switch having two arcuate blades, mounted for rotation with the rotor and evenly spaced thereon, and stationary segments connected to the stator coils. The segments are of like angular width and arranged in a circle for contact by the rotating blades which have an angular width approaching, but not greater than, 180° less the angular width of one of the segments. Thus, the stator coils are excited at all times except the relatively short time each blade contacts only one segment, when switching occurs.



3,786,288
PHONOGRAPH RECORD PLAYER TURNTABLE AND MOTOR ASSEMBLY
Constantinos J. Joannou, 2008 Dorval Ave., Ottawa, Ontario, Canada
Filed Feb. 12, 1973, Ser. No. 331,388
Int. Cl. H02k 11/00
U.S. Cl. 310—68 3 Claims

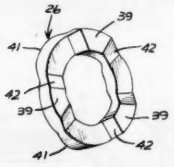


In modern phonograph record players, there are certain problems associated with turntable and motor vibrations. This invention provides a turntable bearing and motor system which has a single ball thrust bearing in the spindle and a second radial bearing which is vibration-isolated from the bearing housing and turntable by resilient material. The turntable is driven by a very slow directly coupled motor or by a conventional motor which drives the turntable via the above mentioned resilient material and thus any motor vibration is isolated from the turntable.

3,786,289
ROTATING MACHINES HAVING END THRUST CUSHIONING ARRANGEMENTS
Joseph E. Baclawski, and William R. Hunt, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.
Filed June 19, 1972, Ser. No. 264,196
Int. Cl. F16c 17/00, 19/32
U.S. Cl. 310—90 6 Claims

Electric motor with stator and rotor assemblies and single member end thrust transmitting and cushioning system. The

single member of each system limits rotor end play and is illustrated as an undulated disc or wavy washer. The thrust member includes first and second pluralities of spaced apart bearing surfaces or pads interconnected by ramps or beam elements. Angularly alternating ones of the pads lie in axially



spaced apart parallel planes and are flexibly movable toward one another when compressed. Thrust member is formed of thermoresponsive (i.e., thermosetting or thermoplastic) material and juncture of ramps and pads promotes desirable lubricating action by lubricant flowing from reservoir, along sleeve bearing to stationary thrust bearing surface.

3,786,290

ELECTROMOTOR CONSTRUCTION

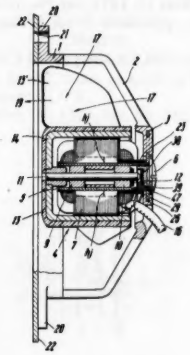
Hermann Papst, St. Georgen; Hans Lunde, Schramberg, and Gunter Wrobel, Villingen, all of Germany, assignors to Papst-Motoren KG, St. Georgen/Schwarzwald, Germany

Filed Jan. 18, 1972, Ser. No. 218,734

Claims priority, application Germany, Jan. 21, 1971, P 21 02 679.9

Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **3 Claims**



A stator is surrounded by a rotor, and bearings journal the rotor for rotation. The bearings are accommodated in an elongated tubular element which coaxially surrounds the axis of rotation of the rotor and adjacent to a free end portion of which there is located a plate element on which the motor is to be mounted. The plate element extends in a plane which is at least substantially normal to the axis of rotation and a screw extends through the plate element and engages with internal threads provided in the free end portion of the tubular element to thereby mount the same and the motor to the plate element.

3,786,291

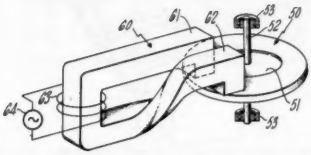
SYNCHRONOUS MOTOR

Philip A. Sidell, West Hartford, Conn., assignor to McGraw-Edison Company, Elgin, Ill.

Continuation of Ser. No. 89,347, Nov. 30, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,950

Int. Cl. H02k *21/00*

U.S. Cl. 310—162 **8 Claims**



A synchronous motor having a plurality of ferromagnetic pole extensions cooperating with a permanent magnet of the oriented type that is through-magnetized. A principal form of the invention places the pole extensions on one side of the permanent magnet rotor.

3,786,292

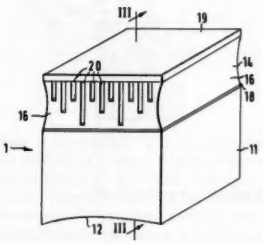
ELECTRICAL CONTACT BRUCH ASSEMBLY WITH ANTI-VIBRATION HEAD

Peter Kenneth Clifford Wiggs, Tadworth, England, assignor to Morganite Carbon Limited, London, England

Filed Apr. 26, 1972, Ser. No. 247,839

Int. Cl. H02k *13/00*

U.S. Cl. 310—251 **6 Claims**



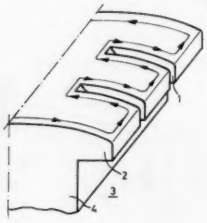
An electrical contact brush assembly with a brush head and a brush body, the brush head being of resiliently deformable material of mechanical impedance of the same order as that of the brush body, and the brush head being in contact with a top face of the brush body to provide an interface therewith so that high frequency compressive sound waves can pass into the brush head from the brush body and be absorbed to reduce brush bounce. The brush head may be slotted.

3,786,293

ELECTRIC SALIENT-POLE SYNCHRONOUS MACHINE ROTOR SOLID METAL POLE PIECE

Walter Boning, and Werner Leistner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 14, 1972, Ser. No. 272,054
Claims priority, application Germany, Feb. 25, 1972, P 22 09 735.4
Int. Cl. H02k 1/24
U.S. Cl. 310—269 5 Claims



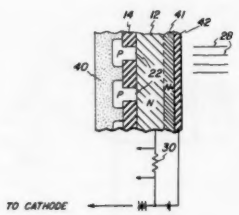
An electric salient-pole synchronous machine rotor solid pole piece having a shoe through which slots are formed which extend from the axial edges of the shoe circumferentially inwardly, has means for electrically bridging the slots adjacent to the axial edges of the shoe.

3,786,294

PROTECTIVE COATING FOR DIODE ARRAY TARGETS

Ronald H. Wilson; Samuel M. Blumenfeld; Rowland W. Redington, and Joseph S. Rosczak, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,313
Int. Cl. H01j 31/28
U.S. Cl. 313—65 AB 6 Claims



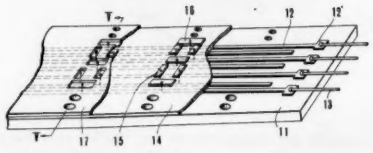
An improved coating for diode array targets is disclosed wherein a resistive sea is coated over the diode array. The resistive sea has a thickness of from 10 to 1000A and a resistivity of from 5×10^8 to 10^9 ohm-centimeters. The resistive sea comprises an electronically conductive borate glass containing an oxide of a metal, e.g. iron, vanadium, cobalt, etc. This layer has been found to serve a protective function and, in particular, serves to prevent an increase in the dark current of the array due to "aging" effects or due to vacuum baking of the array in preparation for use as an image intensifier.

3,786,295

ANODE SUBSTRATES FOR MULTI-DIGIT TYPE FLUORESCENT DISPLAY TUBES

Heihachi Fujii, Watarai-gun; Kazuhiko Kasano; Minoru Matsuno, both of Ise City; Tadahiko Muroi, Omata, and Munehiro Kitamura, Matsuzaka, all of Japan, assignors to Ise Electronics Corporation, Ise City, Mie Prefecture, Japan

Filed Oct. 20, 1972, Ser. No. 299,220
Int. Cl. H01j 7/42; H01k 1/60
U.S. Cl. 313—109.5 3 Claims



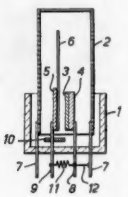
The anode substrate for use in a multi-digit type fluorescent tube comprises an insulator substrate printed with conductors for electrically interconnecting corresponding segment electrodes, an insulator substrate overlying the printed conductors and provided with a plurality of perforations above the printed conductors, a plurality of segment electrodes formed on the insulator film at the positions of the perforations, the electrodes including integral connectors extending through the perforations and respectively connected to the printed conductors, phosphor films applied onto respective segment electrodes, the segment electrodes being arranged in a predetermined pattern to display predetermined letters, and a protective film overlying the insulator film and provided with a plurality of the segment electrodes.

3,786,296

EVACUATED ELCTRON DISCHARGE TUBES

Jonathan Ross Howorth, Chelmsford, England, assignor to English Electric Company Limited, London, England

Filed May 13, 1971, Ser. No. 142,943
Claims priority, application Great Britain, May 15, 1970, 23,619/71
Int. Cl. H01j 19/70
U.S. Cl. 313—176 27 Claims



An ion getter pump for providing a vacuum in a high power microwave discharge tube consists of a body of radio-active material which is arranged to act as the power source for the pump. The pump has a glass support base concentrically surrounding a cathode. Mounted within the tubular cathode is a layer of radio-active isotope material and a particle receiver from which extends an anode rod. Pins are fused through the base to support the cathode, the particle receiver and the isotope material. A shield is provided to prevent sputtering of material on to the base.

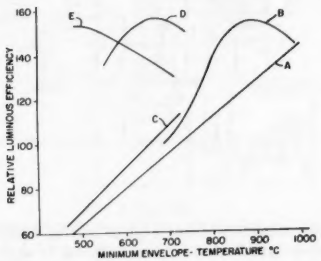
3,786,297
DISCHARGE LAMP WHICH INCORPORATES CERIUM AND CESIUM HALIDES AND A HIGH MERCURY LOADING

Robert J. Zollweg, Monroeville; Kenneth K. Blackham, and Walter J. Burnham, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 108,427, Jan. 21, 1971, abandoned. This application Apr. 13, 1972, Ser. No. 243,711

Int. Cl. H01j *61/20*

U.S. Cl. 313—229 **22 Claims**



Arc-discharge device wherein the discharge-sustaining filling includes as essential elements predetermined amounts of at least one of praseodymium halide, neodymium halide and cerium halide plus cesium halide and sufficient mercury to provide an operating mercury-vapor pressure of from 3 to 15 atmospheres, in addition to the usual starting gas. The rare-earth metal halide provides a very efficient discharge and the cesium halide plus the high mercury loading permits a high efficiency to be obtained with a relatively low minimum envelope temperature. Other discharge-sustaining materials desirably are added to the foregoing essential constituents to modify the color of the discharge.

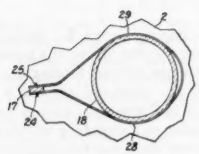
3,786,298
JACKETED LAMP MOUNT FRAME CLIP

Nelson Fitzgerald, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,261

Int. Cl. H01j *1/88*

U.S. Cl. 313—292 **8 Claims**



A jacketed lamp comprising an inner envelope centrally supported within a vitreous outer envelope having a bulb portion domed at one end and necked at the other to which a base is attached. The mount frame for the inner envelope extends from an inlead sealed through the stem at the base end to a dimple formed in the bulb at the dome end. The mount frame engages the dimple by a clip comprising a springy metal band formed into a closed noncircular loop. The loop deforms towards a more circular shape to resiliently engage the dimple and accommodate dimensional variations.

3,786,299
EHT SUPPLY PARTICULARLY FOR TELEVISION RECEIVERS

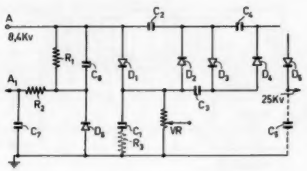
Kenneth Edward Martin, Horley, England, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 857,674, Sept. 15, 1969, abandoned. This application Mar. 3, 1972, Ser. No. 231,764

Claims priority, application Great Britain, Sept. 16, 1968, 43,942/68

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **9 Claims**



A circuit for supplying the final anode voltage to a CRT from a horizontal output transformer has a voltage tripler circuit. A circuit comprising a diode coupled in series with the parallel combination of a resistor and capacitor is coupled across the transformer. This prevents ringing during the scanning time, and hence, improves the regulation of the output voltage.

3,786,300
DYNAMIC CONVERGENCE CIRCUITS

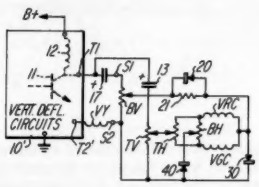
Michael Walter Hill, Pinner, England, assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,861

Claims priority, application Great Britain, May 18, 1970, 23,940/70; May 18, 1970, 23,941/70

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **8 Claims**



Vertical rate convergence circuit provides respective waveforms for control of vertical convergence winding energization during scanning of top raster half and bottom raster half. A pair of convergence windings are interconnected with sources of the respective waveforms in a circuit arrangement providing respective potentiometers for effecting master and differential control of the individual winding currents during each raster half scanning interval. Unidirectional current conducting means in association with one or both of the differential control potentiometers serve to reduce interaction between the control settings. In one embodiment, fixed terminals of each differential control potentiometer are linked to respective convergence coil terminals by individual diodes poled to effectively open-circuit one differential control potentiometer while placing the other differential control potentiometer in circuit with the coils during top scanning, and to effect complementary operation during bottom scanning.

3,786,301
TRAVELLING WAVE TUBES

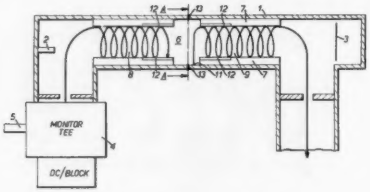
Peter Michael Chalmers, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Nov. 9, 1972, Ser. No. 304,992

Claims priority, application Great Britain, Nov. 9, 1971, 51,907/71

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.6 **13 Claims**



A phase modulated travelling wave tube in which amplitude modulation of the signal passing through the tube is reduced by providing a wave retarding structure which is in two electrically isolated portions arranged co-axially in line with one another, and applying modulating d.c. potential to the portion of the wave retarding structure nearer the electron gun.

3,786,302
ELECTROSTATIC LENS FOR CATHODE RAY TUBES

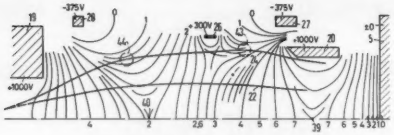
Werner Veith, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 1, 1971, Ser. No. 148,423

Claims priority, application Germany, June 25, 1970, P 20 31 486.7

Int. Cl. H01j *29/56*

U.S. Cl. 315—16 **8 Claims**



An electrostatic lens constructed of cylindrical tube sections for cathode ray tubes having two terminal electrodes and a center electrode. The terminal electrodes have a high positive potential applied to them. The center electrode is sub-divided into two parts, and a correcting electrode is inserted between these parts. The correcting electrode has a potential applied thereto which is more positive than the potential of the center electrode, and less positive than the potential of the terminal electrodes.

3,786,303
CATHODE RAY TUBE DUAL MODE HORIZONTAL DEFLECTION CONTROL AMPLIFIER

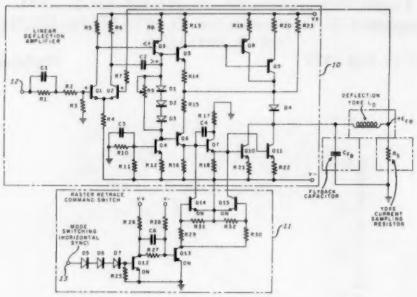
Hugh C. Hilburn, Phoenix, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Apr. 12, 1971, Ser. No. 132,950

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **7 Claims**

A dual mode cathode ray tube horizontal deflection amplifier normally operable in a linear mode for horizontal forward scanning and/or symbol writing during the vertical re-trace period and controllably switchable to a non-linear resonant flyback mode for horizontal re-trace. The amplifier comprises a differential input stage cascaded with a push-pull output stage which couples to both the horizontal defection coil of the cathode ray tube and a parallel connected capacitor, forming a resonant circuit. The differential input stage compares the input deflection signal with a feedback signal proportional



to the beam deflection to assure linear control. Switch-over to the resonant flyback mode is accomplished by actuating the push-pull stage so as to present a high impedance to the resonant circuit whereupon a half-cycle of oscillation commences to produce the horizontal retrace.

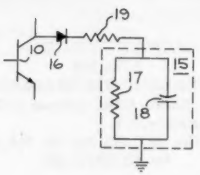
3,786,304
DAMPING CIRCUIT FOR VERTICAL DEFLECTION SYSTEM

John D. Jordan, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Sept. 28, 1971, Ser. No. 184,518

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **2 Claims**



An improved damping circuit for limiting the maximum voltage and slowing the rate of rise of a pulse produced by an inductive winding when current flowing therethrough is suddenly interrupted. An additional resistor is placed in series with a conventional R-C damping network and the circuit thus constituted is coupled to a switching transistor by means of a diode. Voltage across the transistor rises more slowly, and attains a lesser maximum value, than when the conventional R-C network alone is used.

3,786,305
FIELD EMISSION ELECTRON GUN

Tsutomu Komoda, and Setsuo Nomura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

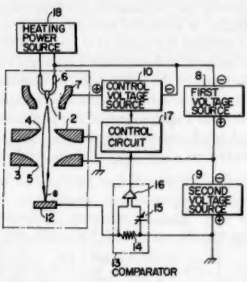
Filed May 15, 1972, Ser. No. 253,245

Int. Cl. H01j *29/70*

U.S. Cl. 315—30 **5 Claims**

In an electron gun device of the field emission type having a cathode tip, and first and second anodes connected to responsive voltage sources, a control electrode connected to a con-

trol voltage source is disposed in the neighborhood of the cathode tip so as to control the electron beam emitted from



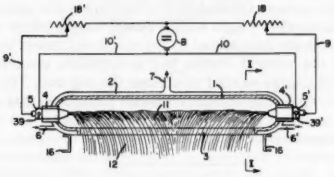
the cathode tip whereby a stable electron beam can be obtained.

3,786,306

PLASMA CURTAIN OF TWO OR MORE PLASMAS

Henry R. P. J. Schoumaker, Bruxelles, Belgium, assignor to La Soudure Electrique, Procedes Arcos, Anderlecht, Belgium

Filed Feb. 16, 1972, Ser. No. 226,842
Claims priority, application Belgium, Mar. 3, 1971, 100,431
Int. Cl. H05h *1/00*
U.S. Cl. 315—111 **13 Claims**



A process or apparatus for producing two or more plasmas which comprises projecting opposed plasmas into a closed space to meet in the space and form a common arc, and expelling the combined plasmas from the closed space sideways with respect to their original direction under the pressure of plasmagenic gas through at least one nozzle elongated in the sideways direction and thus producing a flame projecting outward through the elongated nozzle as at least one blade of a continuous plasma jet. In one of the forms two or more blades are projected through elongated nozzles which may be parallel to one another, divergent from one another, or convergent to one another. The curtain of plasma may deposit material on the inside or the outside or both of a tube. The chamber from which the plasma curtain issues may be supported on a roller carriage. The single chamber may also be rotated around an axis. In one embodiment the chambers are held by links on the outside of a roller or the like.

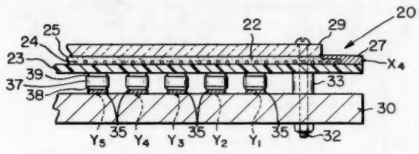
3,786,307

SOLID STATE ELECTROLUMINESCENT X-Y DISPLAY PANELS

Thomas L. Robinson, East Aurora, N.Y., assignor to Atronics Corporation, Buffalo, N.Y.

Filed June 23, 1972, Ser. No. 265,772
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV **22 Claims**

One or more EL electrodes in the form of wire mesh strips coated with electroluminescent phosphor are sandwiched between a rigid, transparent cover and a sheet of dielectric insulation. This panel is removably secured above a printed circuit board which carries a plurality of metal electrode strips that extend transversely to the EL electrode or electrodes. A plurality of spaced, non-linear electrical elements are secured between the panel and board to register with, for example, points where the EL electrode(s) intersect the printed circuit electrodes. In one embodiment, when an AC or pulsating voltage is applied across a selected EL electrode and an intersecting circuit board electrode, the non-linear element at the intersection of these electrodes conducts and causes the phosphor coating on the registering portion of the energized EL electrode to glow with a regulated intensity. If the non-linear elements are SCR's, the conduction of each SCR may be controlled by a pair of triggering signals arranged to be applied selectively as an X and Y coordinate, respectively, for each SCR. One or more spots, each registering with one of the non-linear elements, may thus be made to glow at selected points on the face of the panel, and with different colors, if desired.

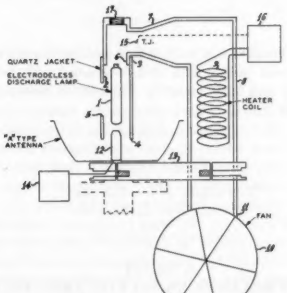


3,786,308

TEMPERATURE STABILIZED SPECTRAL SOURCE

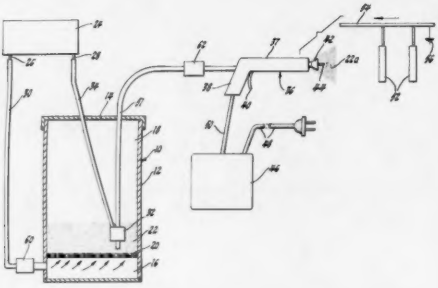
Richard F. Browner; James D. Winefordner, both of Gainesville, Fla., and Tom H. Glenn, deceased, late of Gainesville, Fla. (by Mary T. Glenn, heir), assignors to Board of Regents, Tallahassee, Fla., by said Browner and Winefordner

Filed Mar. 6, 1972, Ser. No. 232,035
Int. Cl. G03b *27/04*; **H05b** *41/16, 41/24*
U.S. Cl. 315—248 **14 Claims**



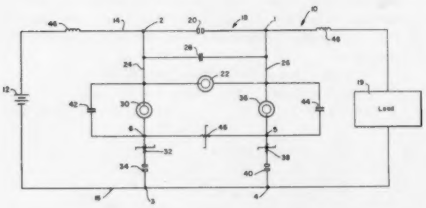
A temperature stabilized spectral source comprising an electrodeless discharge lamp energized in a radio frequency field, the temperature of the lamp being controlled by disposing the lamp in air or other gas of controlled temperature. The exciting field is typically in the microwave frequency range.

3,786,309
ELECTROSTATIC POWDER SPRAYING METHOD AND APPARATUS
Norman O. Miottel, Waterford, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 12, 1973, Ser. No. 323,033
Int. Cl. H05b *3/60*
U.S. Cl. 317—3 **6 Claims**



An electrostatic powder spraying method and apparatus wherein random electrical charges are neutralized on the powder to be sprayed prior to delivery of the powder particles to an electrostatic powder spray gun.

3,786,310
HYBRID DC CIRCUIT BREAKER
Willis F. Long, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 29, 1973, Ser. No. 346,208
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 C **15 Claims**



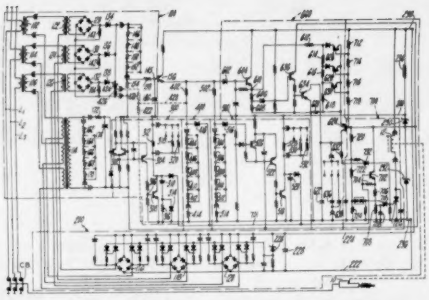
DC circuit breaker has both in-line and line-to-ground components to limit in-line and line-to-ground voltages during load breaking and fault clearing. Impedance insertion forces down current.

ERRATUM

For Class 317—018 see:
Patent No. 3,786,356

3,786,311
CIRCUIT BREAKER AND STATIC TRIP CIRCUIT THEREFOR
Charles F. Hobson, Jr., Southington, and Henry G. Willard, Wethersfield, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Jan. 2, 1973, Ser. No. 319,977
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **4 Claims**

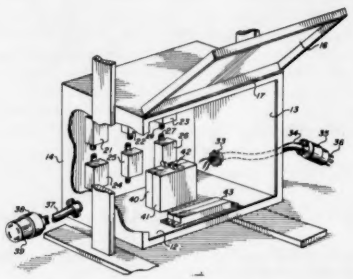
A circuit breaker including separable contacts, an operating means for opening and closing the contacts and a trip coil responsive to a static control circuit for tripping the circuit breaker when instantaneous power in one of the phases of a three phase alternating current circuit exceeds adjustable predetermined levels for adjustable predetermined times as well as ground faults. A separate non-saturated iron core current transformer detects the current in each of the phases independently and powers independent cascaded current transformers having outputs of the same polarity connected to form OR circuits and provide a voltage signal correlated with the instantaneous current in a single one of the protected lines with the highest signal back biasing the others. This signal is amplified and delivered to a plurality of independent solid state



adjustable time delay circuits for instantaneous time delay, short time delay and long time delay actuation of the trip coil dependent upon the extent to which the current levels in the protected line providing the signal exceeds a predetermined level of line current. Ground fault protection is also provided.

Also disclosed is a light weight power supply whose power requirements are determined by the electronic power requirements of the control circuit but nonetheless provides the power level energy needed to actuate the trip coil. The static control circuit further includes fail-safe features so that a poor circuit connection or malfunction will not render the circuit breaker inoperative.

3,786,312
PORTABLE ELECTRIC SCATTERBOX FOR POWER DISTRIBUTION ON A CONSTRUCTION SITE
Richard D. Roussard, 3740 N. Romero Rd., Tucson, Ariz.
Filed Oct. 17, 1972, Ser No. 298,401
Int. Cl. H02b *1/18*
U.S. Cl. 317—112 **7 Claims**



This specification discloses a portable electric scatterbox intended for use on construction sites where the contractor has installed an electrical supply line for delivering electrical current at a voltage of 240 volts. This receptacle is provided with

six receptacle outlets from which electrical current at 120 volts is taken. The scatterbox includes wiring which connects three of the receptacles to a 120-volt bus line and a neutral bus line, with a circuit breaker included in the connections. The other three of the receptacles are connected to a second 120-volt bus line and the neutral bus line, with a second circuit breaker included in these connections.

3,786,313

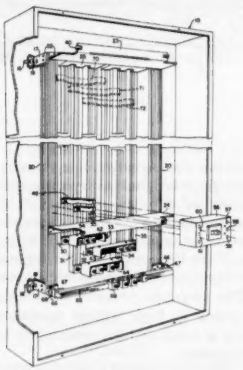
PANELBOARD ASSEMBLY WITH IMPROVED SUPPORT MEANS

Sidney J. Coles, Carlisle, and Bernard C. Teal, Ancaster, Ontario, both of Canada, assignors to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed May 17, 1972, Ser. No. 254,296

Int. Cl. H02b

U.S. Cl. 317—120 **8 Claims**



This invention relates to a panelboard assembly which is largely composed of a number of standard premanufactured components. The components may be easily assembled together to give a variety of combinations of assemblies so as to be adaptable to receive an exceedingly large number of breaker combinations. Because most of the interior components of the panelboard are fabricated from standard extrudable components, it is possible to manufacture the panelboard in a variety of lengths and widths, so as to be able to supply panelboards having a wide range of power ratings. Also, because of the case with which the interior components of the panelboard may be conveniently manufactured in various dimensions, it is possible to adapt the panelboard for use in areas where physical dimensions are limited because of some prior requirement, such as a restraint on size due to the installation of a previously smaller-rated panelboard or some other restriction of a similar nature.

3,786,314

REGULATING ARRANGEMENT FOR SOLENOID VALVES AND THE LIKE

Wolfgang Misch, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

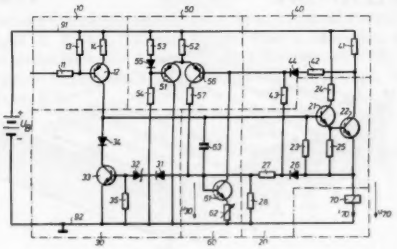
Filed July 3, 1972, Ser. No. 268,637

Claims priority, application Germany, July 1, 1971, P 21 32 717.3

Int. Cl. H01f 7/18

U.S. Cl. 317—154 **13 Claims**

An arrangement for regulating the current flow in the solenoid of an electromagnetically actuated mechanism, particularly a high-speed solenoid valve, of the type requiring a higher activating current to effect movement of the armature from a first to a second position and a lower holding current to maintain the armature in such second position. The arrangement includes a power supply connected to the solenoid, a switch for initiating the build-up of current in the solenoid and a control arrangement responsive to the solenoid current and operative for maintaining the voltage across the solenoid substantially constant until the solenoid current reaches a predetermined threshold value. The control arrangement further includes a current-regulating arrangement operative after said threshold value has been reached for maintaining the solenoid current at a holding value lower than said threshold value.



3,786,315

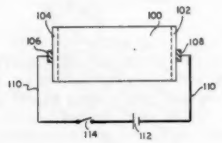
ELECTROLUMINESCENT DEVICE

Carver A. Mead, Pasadena, and James O. McCaldin, South Pasadena, both of Calif., assignors to Intel Corporation, Mountain View, Calif.

Continuation of Ser. No. 851,906, Aug. 21, 1969, abandoned. This application Apr. 3, 1972, Ser. No. 240,490

Int. Cl. H01l 3/00; H05b 33/00

U.S. Cl. 317—234 R **7 Claims**



A direct current electroluminescent device for room temperature generation of blue and green light at low voltages and power levels, comprising a body of n-type zinc sulfide of low resistivity and high luminescent efficiency containing a first surface region treated to form an ohmic electron injection contact and a second region treated to contain within a thin layer of below 1 micron at least 10^{17} cm^{-3} of a Group I metal hole injection states which have an energy level intermediate the valence band of zinc sulfide and the Fermi level of a metal contact electrode and states which generate under bias a net negative charge within the layer.

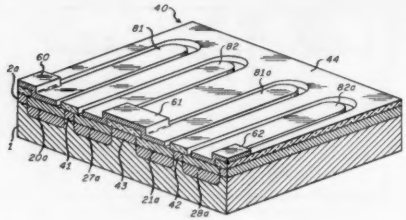
An electronegative metal electrode is applied to the layer and a relatively electropositive metal electrode is applied by to the first surface region. When a forward bias is applied to the device, electrons are injected into the first region and the net negative charge generated in the layer raises the energy of the hole injection states toward the metal Fermi level to permit hole injection. The injected holes and electrons combine at recombination centers in sufficient numbers at room temperature to emit radiation visible under ordinary illumination.

3,786,316

HIGH FREQUENCY DIODE ENERGY TRANSDUCER AND METHOD OF MANUFACTURE

Harry Kroger, Sudbury, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 37,638, May 15, 1970, Pat. No. 3,684,901.
This application June 2, 1972, Ser. No. 259,091
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R 4 Claims



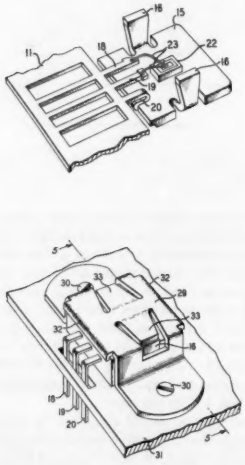
A miniature microwave or high frequency amplifier or oscillator diode array is disclosed in the form of a semiconductor microcircuit array of surface diodes with interconnections arranged for efficient distribution of bias and oscillating high frequency fields to the active diode elements for provoking high efficiency exchange of energy therein between the oscillating microwave or high frequency field and an electrical power source.

3,786,317

MICROELECTRONIC CIRCUIT PACKAGE

William George Thierfelder, Easton, Pa., assignor to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed Nov. 9, 1972, Ser. No. 305,051
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R 4 Claims



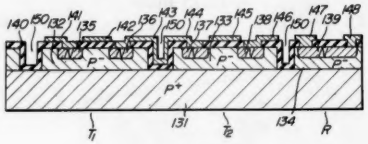
A package for microelectronic circuits is disclosed in which the mounting mechanism isolates the circuit chip and encapsulating plastic from any applied stress when mounted. The mechanical force of the mounting mechanism is applied to a pair of tabs extending upward from a combination base/heat sink. This permits the applied stress to bypass the encapsulant and be transmitted directly to the heat sink and the mechanical support.

3,786,318

SEMICONDUCTOR DEVICE HAVING CHANNEL PREVENTING STRUCTURE

Toshimitu Momoi, Tokyo, and Isamu Homma, Hokkaido, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1967, Ser. No. 674,236
Claims priority, application Japan, Oct. 14, 1966, 41/67125
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 4 Claims



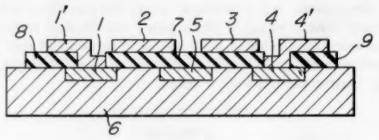
A semiconductor device, wherein a plurality of light doped p-type silicon regions are formed separately in an island form on a heavily doped P^+ type silicon substrate in contact therewith, semiconductor circuit elements like diodes, transistors, resistors, capacitors etc. are formed in the principal surfaces of the P^- regions and the exposed surface parts of the P^+ substrate and P^- regions are covered with silicon oxide films. This invention provides a stabilized semiconductor device capable of high voltage operation, wherein the leakage current is small and the interaction between the circuits elements is small.

3,786,319

INSULATED-GATE FIELD-EFFECT TRANSISTOR

Okumura Tomisaburo, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 20, 1967, Ser. No. 624,477
Claims priority, application Japan, Mar. 28, 1966, 41/19828
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 7 Claims



A multi-polar insulated gate transistor having two or more isolated electrodes formed on an insulated film, and an island region having a conductivity type different from that of the semiconductor proper and located in the portion of the substrate beneath said film and below the gap between said electrodes, whereby a large current can flow through the element located closer to the drain when the respective elements which may consist of the pair, i.e., each gate and source-island, island-island or island-drain are under identical voltage conditions.

3,786,320

SCHOTTKY BARRIER PRESSURE SENSITIVE SEMICONDUCTOR DEVICE WITH AIR SPACE AROUND PERIPHERY OF METAL-SEMICONDUCTOR JUNCTION

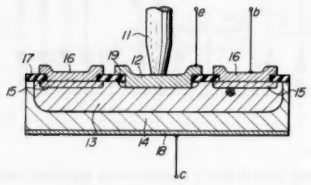
Gota Kano, Kyoto; Shohei Fujiwara, Takatsuki-shi; Mutsuo Iizuka, Osaka; Hiromasa Hasegawa, Takatsuki-shi, and Tsukasa Sawaki, Toyonaka-shi, all of Japan, assignors to Matsushita Electronics Corporation, Oaza Kadoma, Kadoma-shi, Osaka, Japan

Filed Sept. 29, 1969, Ser. No. 861,647

Claims priority, application Japan, Oct. 4, 1968, 43/72667. The portion of the term of this patent subsequent to Oct. 2, 1990, has been disclaimed.

Int. Cl. H011 *11/00, 15/00*

U.S. Cl. 317—235 R **11 Claims**



Disclosed is a pressure-sensitive transistor whose emitter or collector junction is formed by use of a Schottky barrier junction and wherein the current through the transistor changes in accordance with the applied pressure when pressure is applied to said junction by pressure applying means. Such a transistor is advantageous in that a high pressure-to-current conversion factor is obtained, little noise is generated at the junction, and the reverse leakage current appearing at the junction is extremely small.

3,786,321

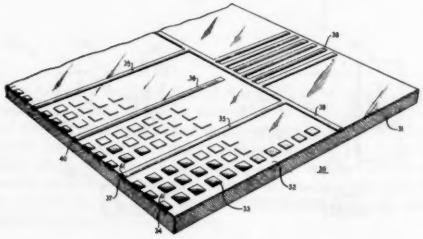
COLOR CAMERA TUBE TARGET HAVING INTEGRAL INDEXING STRUCTURE

James Robert Mathews, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 8, 1973, Ser. No. 339,179

Int. Cl. H011 *15/00*

U.S. Cl. 317—235 P **3 Claims**



In color camera tubes having capacitance compensated indexing strips, two sets of interdigitated conductive indexing strips are placed on the cathode side of a camera tube target onto which the scene is focused. These conducting strips, which enable referencing of the electron beam position, are formed in a highly precise pattern by means of conductivity type zones formed within the semiconductor target itself. Typically, they may be fabricated by solid state diffusion or by ion implantation of a significant impurity in the same manner as is used to form the p-n junction diodes which comprise the imaging means of the target. Advantageously, the conductivity type zones are covered by means of selective electrodeposition with a thin metallic plating to enhance their performance.

3,786,322

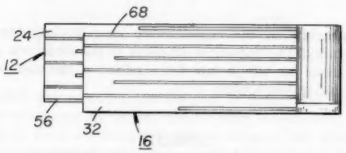
UNITARY WOUND RESISTOR-CAPACITOR NETWORK

Donald R. Brown, Downers Grove; Otto I. Masopust, Jr., Claredon Hills, and James F. Stoltz, LaGrange, all of Ill., assignors to Western Electric Company, Incorporated, Nev York, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,072

Int. Cl. H01g *1/00*

U.S. Cl. 317—25€ **5 Claims**



Two network forming strips are wound to form a resistor-capacitor network roll. Each strip is a sheet of dielectric material having a contiguous layer of metal, on one side thereof, formed in an elongated conductive path which extends back and forth lengthwise along the strip in serpentine fashion. An electrical connection is made at each end of the network roll with an end portion of a different one of the conductive paths to form an R-C network therebetween having a resistance which is significant with respect to the capacitance thereof.

3,786,323

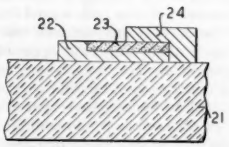
CAPACITOR WITH ANODIZED ELECTRODE OF TANTALUM SILICON ALLOY

Frank Groom Peters, Nutley, and Newton Schwartz, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 3, 1972, Ser. No. 268,588

Int. Cl. H01g *1/01*

U.S. Cl. 317—258 **5 Claims**



A thin film material capable of functioning as the anode in electrochemically formed thin film capacitors and as the resistive track in anodized resistors in thin film integrated circuits comprising a film of sputtered tantalum and silicon.

3,786,324

CAPACITOR WITH DECREASED FLAMMABILITY

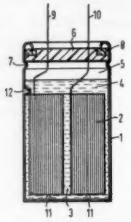
Josef Kotschy, Kreillerstrasse 68, Munich, Germany

Filed May 4, 1973, Ser. No. 357,326

Claims priority, application Germany, May 9, 1972, P 22 22 699.9

Int. Cl. H01g 3/215

U.S. Cl. 317—258 18 Claims



A capacitor of the regenerative type having decreased flammability. The capacitor employs as the dielectric fluid a hydrocarbon to which has been added a mixture of perfluorinated hydrocarbons.

3,786,325

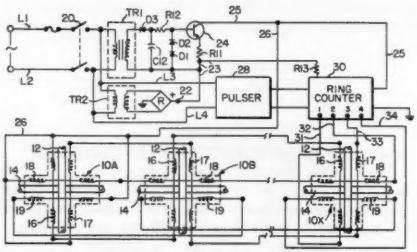
ELECTRONIC MOTORLESS STIRRER

Kenneth Vincent Tunnah, Buffalo, N.Y., assignor to Associated Biomedic Systems, Inc., Buffalo, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,667

Int. Cl. H02k 23/36

U.S. Cl. 318—138 15 Claims



A plurality of stators are secured in a metal housing or beneath a table to form a corresponding number of stirring stations on the top of the housing or table. Each stator comprises either two pairs of wire coils wound about four, rectangularly spaced cores, with approximately one half of the coils of each pair wound about diagonally opposed cores; or a pair of intersecting cores, each of which is surrounded by a pair of wire coils. The upper ends of the four cores of the first-mentioned stator form four, rectangularly spaced poles; and the intersecting cores of each second-mentioned stator project beyond opposite ends of their associated coils and are bent upwardly also to form four rectangularly spaced poles. Each stator is mounted so that its cores form four, stationary poles at each stirring station. Like coils of each stator are periodically energized by a DC power supply to develop a rotating magnetic field, thereby to rotate a magnetic stirring slug positioned in breaker or other fluid container positioned on the stirring station.

3,786,326

STARTING CIRCUIT FOR A SYNCHRONOUS MACHINE HAVING AN ELECTRONIC COMMUTATOR

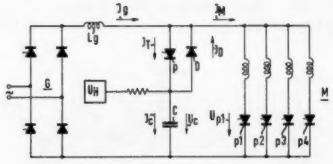
Klaus Hubner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 17, 1972, Ser. No. 281,556

Claims priority, application Germany, Aug. 17, 1971, P 21 41 120.1

Int. Cl. H02r 5/40

U.S. Cl. 318—138 3 Claims



A starting circuit for a synchronous machine having controlled semi-conductors in the individual winding circuits of the machine is disclosed in which at least one auxiliary circuit connected in parallel to the windings is used. The auxiliary circuit comprises a capacitor which prior to operation of the circuit, is charged to a voltage opposite to the conducting voltage of the winding thyristors. An auxiliary thyristor connected to conduct in the same direction as the winding thyristors is connected in series with the capacitor and a diode of opposite polarity is connected in parallel to the auxiliary thyristor.

When a winding thyristor is to be cut off the auxiliary thyristor is triggered to conduct thereby causing the capacitor to discharge through the conducting winding thyristor thereby placing a negative cut off voltage on this thyristor and cutting off any further conduction of the thyristor.

3,786,327

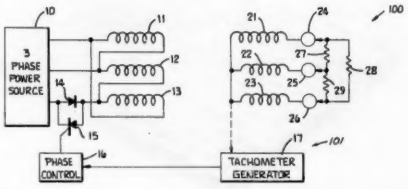
A.C. INDUCTION MOTOR SPEED CONTROL SYSTEMS

Douglas M. Dyer, 308 S. Nineth, Noblesville, Ind.

Filed Oct. 7, 1971, Ser. No. 187,281

Int. Cl. H02p 3/20

U.S. Cl. 318—211 18 Claims



Circuits for the control of the speed of an A.C. induction motor are disclosed. These circuits use SCR's to introduce a D.C. component into the windings of an A.C. motor to cause a controlled amount of dynamic braking to counteract a portion of the torque produced by the A.C. voltage to the motor. This results in a very inexpensive method of controlling the speed of an A.C. induction motor while maintaining excellent inherent speed regulation.

3,786,328
SWITCHING CIRCUIT FOR CONTROLLING ALTERNATING CIRCUIT FLOW

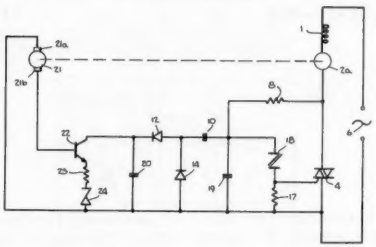
Isaac Bos, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed Sept. 15, 1972, Ser. No. 289,538

Claims priority, application Switzerland, Sept. 16, 1971, 13563/71

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **9 Claims**



Disclosed herein is a control circuit including an automatically controlled switch coupled in series with a load and an alternating current source, wherein the switch regulates current flow in both directions of flow from the source. A triggering circuit is coupled to a control electrode of the switch for actuating the switch to permit current flow during equal energy portions of both the positive and negative half-waves of the source voltage.

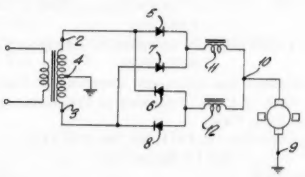
3,786,329
DYNAMIC BRAKE

James Sidney Whited, Radford, Va., assignor to Kollmorgan Corporation, Hartford, Conn.

Filed Jan. 31, 1973, Ser. No. 328,295

Int. Cl. H02p *3/12*

U.S. Cl. 318—379 **4 Claims**



In a full wave rectified control circuit for a D-C motor comprising two banks of silicon controlled rectifiers for forward and reverse operation, there is provided a pulse generation system which applies a firing signal to each of the control SCR's when the power to the motor is lost. A short circuit is thereby provided for the motor armature through the control circuit and the rotational energy of the motor is rapidly dissipated to effect dynamic braking.

3,786,330
AUTOMATIC WINDSHIELD WIPING APPARATUS BY USING MICROWAVES FOR VEHICLES

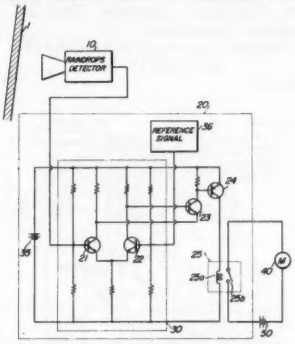
Goro Inoue, and Ming-Tsung Huang, both of Hamamatsu, Japan, assignors to Nippendenso Co., Ltd., Aichi-ken, Japan

Continuation-in-part of Ser. No. 10,130, Feb. 10, 1970, abandoned. This application Apr. 28, 1972, Ser. No. 248,487

Int. Cl. H02p *3/00*

U.S. Cl. 318—483 **4 Claims**

An automatic windshield wiping apparatus for vehicles which comprises a raindrops detecting device comprising a microwave oscillator, a wave guide adapted for irradiating microwaves generated by the microwave oscillator on the windshield of a vehicle and means responsive to change in microwaves reflected from or transmitted through the windshield due to raindrops thereon to detect the raindrops thereby changing its output signal; and a switching circuit adapted to drive a driving motor for a wiper of the windshield responsive to the change of the output signal from the raindrops detecting device.



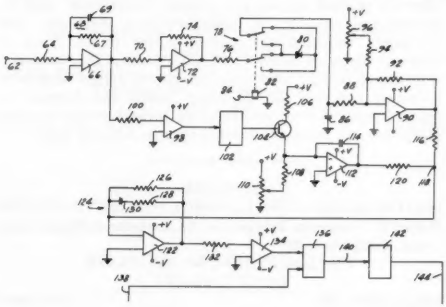
3,786,331
DIGITAL TRACER

Marcel R. Sommeria, Bridgeview, Ill., and David I. Schaap, Munster, Ind., assignors to Hyper-Loop, Inc., Bridgeview, Ill.

Filed Dec. 11, 1972, Ser. No. 313,974

Int. Cl. G05b *19/24*

U.S. Cl. 318—570 **10 Claims**

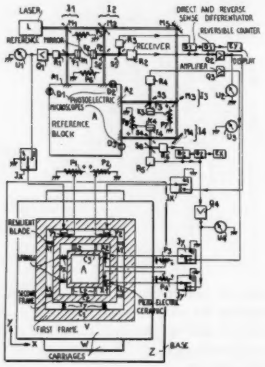


A tracer for use with a profiling machine or the like has a tracer head which is excited with a source of alternating current to produce an output which varies in amplitude and phase in accordance with the direction and magnitude of deflection of the tracer stylus. The a.c. signal from the stylus is converted into a pulse encoded in time to be representative of the direction of stylus deflection. The time position of the pulse is converted into a digital representation of the angle of the stylus deflection, and the sign and cosine of that angle are extracted from memory and separately multiplied by a factor derived from a manually controlled means operative for preselecting a tracing speed in two multipliers, the outputs of which comprise pulse trains each having a separate pulse for each increment of movement along a machine axis. The pulse trains are connected to a conventional motor drive for driving the machine in response to the output of the tracer head.

3,786,332
MICRO POSITIONING APPARATUS

Georges Hepner, Neuilly-sur-Seine; Michel Lacombat, Savigny-sur-Orge, and Raymond Marcy, Paris, all of France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Filed Mar. 19, 1969, Ser. No. 808,619
Int. Cl. G01b *9/02*
U.S. Cl. 318—577 **13 Claims**

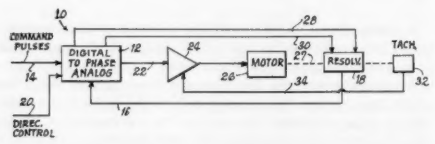


A workpiece is positioned in the order of tenths of microns, or less, with respect to a fixed assembly, with automatic stabilization of coordinates by apparatus having a solid base with two movable carriages, displacable each in a different orthogonal direction, which drive a reference block bearing the piece to be positioned. To compensate for malpositioning a correction means is provided consisting of an assembly of at least three concentric frames, the first one (C1) being fixed on the upper carriage and the other two being coupled to each other by resilient means and position transducers, such as piezoelectric ceramic or megnetostrictive elements. The transducer displaces the corresponding frame along a direction where no resilient means are present. Displacement is measured by four interferometers whose beams illuminate reflecting faces of the reference blocks and fringes; or photoelectric microscopes aimed for instance at an engraved marking on the block of some tens microns wide are used.

3,786,333
DIGITAL REGULATING CONTROL FOR SERVO SYSTEM

Marcel R. Sommeria, Bridgeview, Ill., assignor to Hyper-Loop Inc., Bridgeview, Ill.

Filed June 27, 1972, Ser. No. 266,579
Int. Cl. G05b *1/01*
U.S. Cl. 318—604 **10 Claims**

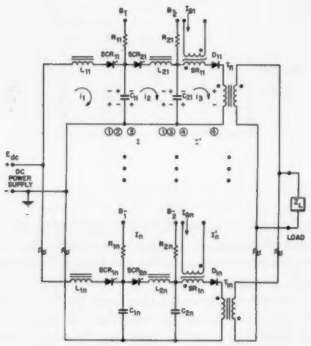


In a servo system, a digital regulating control unit has a pair of counters respectively responsive to a source of clock signals and to a source of incremental position command signals, with a comparator for producing a signal having a frequency proportional to the difference in the counting rates of the two counters, and a phase detector for comparing the phase of the signal generated by the comparator with the phase of a signal generated in response to movement of the controlled member of a servo system.

3,786,334
MAGNETIC PULSE COMPRESSION RADIO-FREQUENCY GENERATOR APPARATUS

Paul R. Johannessen, Lexington, Mass., assignor to Megapulse Incorporated, Waltham, Mass.

Filed Aug. 12, 1971, Ser. No. 171,174
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 R **7 Claims**

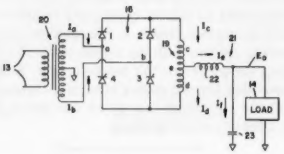


Magnetic pulse compression radio-frequency generators involving preferably SCR-controlled sequential inverters connected with magnetic pulse compression circuits feeding a common output load.

3,786,335
POWER CONVERSION APPARATUS AND SYSTEM THEREFOR

Edward H. Phillips, Los Altos, and Raymond D. Underwood, Saratoga, both of Calif., assignors to Programmed Power, Inc., Menlo Park, Calif.

Filed Oct. 18, 1971, Ser. No. 190,110
Int. Cl. H02m *5/30*
U.S. Cl. 321—69 R **12 Claims**

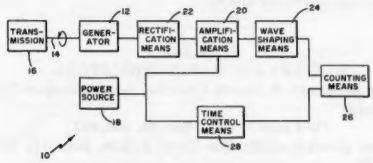


Power conversion apparatus for converting a high frequency signal to a lower frequency a.c. or controlled d.c. output signal which includes an SCR bridge rectifier and a control system utilizing the integrated input signal for generating the firing voltages for the SCRs. An autotransformer in the bridge immunizes the magnitude of the output signal against changes in the load current.

3,786,336
APPARATUS FOR MEASURING THE ANGULAR DISPLACEMENT AND THE ANGULAR VELOCITY OF A ROTATION MEMBER

Thomas E. Lohr, Mount Clemens, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 11, 1972, Ser. No. 242,961
Int. Cl. H02p 9/40
U.S. Cl. 322—51 6 Claims

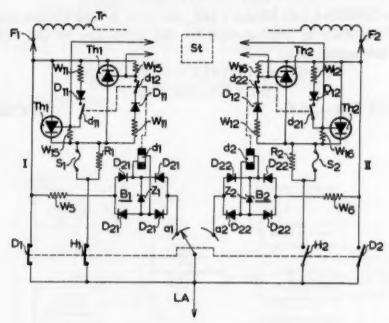


Apparatus for measuring the angular displacement and the angular velocity of a rotating member. Mechanical energy causing angular motion of the rotating member is transformed into electrical energy in the form of a plurality of electrical pulses which are counted during a preselected time interval. Variations in the magnitude of the cycle do not alter the accuracy of the apparatus. Thus, the angular displacement and the angular velocity of the rotating member can be economically measured with greater accuracy than has previously been possible with voltage dependent apparatus.

3,786,337
THYRISTORS FOR EFFECTING TAP CHANGING ON TRANSFORMERS AND INCLUDING CURRENT LIMITING RESISTORS AND STANDBY TRIGGER SYSTEM

Kurt Kugler, Lappersdorf, Germany, assignor to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany

Filed Feb. 14, 1973, Ser. No. 332,455
Claims priority, application Germany, Feb. 17, 1972, P 22 07 367.2
Int. Cl. G05f 1/20; H02m 5/12
U.S. Cl. 323—43.5 S 10 Claims

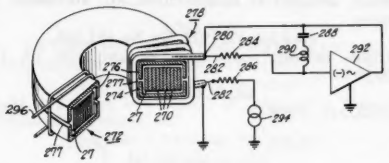


Tap-changing means for tapped transformers include thyristors for effecting tap-changes. Additional tap-changing means include electric fuses, current-limiting resistors and a relay-controlled standby thyristor trigger system prevent the occurrence of dangerous short-circuit currents in case of malfunction of the principal thyristor trigger means.

3,786,338
TRANSFORMER FOR DIRECT AND/OR ALTERNATING CURRENTS

Roswell W. Gilbert, New York, N.Y., assignor to Technical Management Services, Inc., Westfield, N.J.

Division of Ser. No. 6,075, Jan. 27, 1970, Pat. No. 3,626,292.
This application Sept. 27, 1971, Ser. No. 184,024
Int. Cl. G01r 7/00; H01f 19/08
U.S. Cl. 323—48 26 Claims

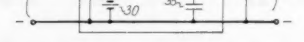


The transformer device has drive and sense windings, a high-gain differential amplifier for supplying magnetization current and negative feedback from the sense winding to the amplifier. A switching circuit is provided for repeatedly reversing the connections of the input terminals to the primary winding, and circuitry is provided for causing the magnetic flux in the core of the transformer to excursion symmetrically below saturation level, thus enabling operation with D.C. input signals. Specifically, a storage capacitor is charged during one sub-cycle of the switching, and then is connected in series with the input during the next sub-cycle to restore the core magnetization and ensure that the transformer will not saturate. A transformer operable by either A.C. or D.C. is formed by oppositely operating two transformers in which the inputs are reversed and flux levels are controlled to prevent saturation. A transformer with a co-axial winding terminated at each end with its characteristic impedance also is provided. Such termination provides critical damping of voltage transients.

3,786,339
NON-REGENERATIVE SWITCHING VOLTAGE REGULATOR

Slavko Milovancevic, P.O. Box 402, Torrance, Calif.

Filed Dec. 30, 1970, Ser. No. 102,631
Int. Cl. G05f 1/56
U.S. Cl. 323—22 T 3 Claims



A non-regenerative switching voltage regulator and filter circuit for converting a pulsating DC input voltage to a regulated DC output voltage. Also a non-regenerative switching voltage regulator and filter circuit for converting a pulsating DC input voltage to a regulated and well filtered DC output voltage by use of an additional series type regulator, coupled to the same reference voltage as mentioned non-regenerative switching voltage regulator and filter circuit. The reference voltage embodied in the form of a Zener diode compensates for temperature changes in the circuit in both mentioned arrangements. In addition, for purpose of better switching and the base-emitter junction protection of the series pass transistor from conductive into non-conductive state a protective resistor is connected across said base-emitter junction. Invention uses no inductance in any form, heatsinks for power transistors are minimized and overall efficiency is good.

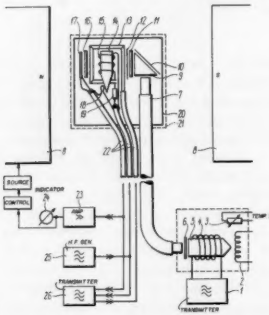
ERRATUM

For Class 323—020 see:
Patent No. 3,786,344

3,786,340
MINIATURE OPTICALLY PUMPED MAGNETOMETER PROBE USING LIGHT PIPES TO TRANSMIT LIGHT TO THE PROBE

Ernst W. Otten, and Werner D. Farr, both of Heidelberg, Germany, assignors to Bruker-Physik AG, Forchheim, Germany

Filed July 13, 1971, Ser. No. 162,280
Claims priority, application Germany, July 14, 1970, P 20 34 797.1
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 R **5 Claims**

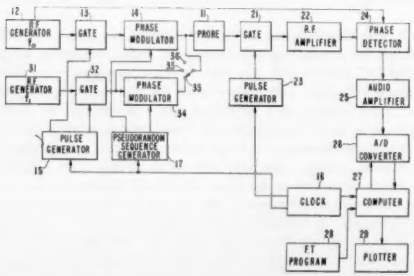


A magnetometer provides a cell containing atomic vapor, a coil surrounding the cell and a photocell responsive to light penetrating the cell all disposed in a probe of small volume, whereas the light source, r.f. generator for energizing the coil and indicating device are disposed remote from said probe with said light source being connected to said probe with said light source being connected to said probe by a flexible light conductor.

3,786,341
MAGNETIC RESONANCE SPECTROMETER EMPLOYING STOCHASTIC RESONANCE BY A PSEUDORANDOM BINARY SEQUENCE AND TIME-SHARE MODULATION

Weston A. Anderson, Palo Alto, Calif., and Richard R. Ernst, Winterthur, Switzerland, assignors to Varian Associates, Palo Alto, Calif.

Filed Oct. 26, 1972, Ser. No. 300,929
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **20 Claims**

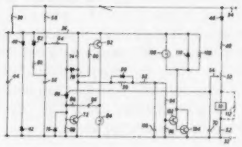


A magnetic resonance spectrometer employing a pseudorandom binary sequence to simultaneously excite magnetic resonance of a plurality of resonance lines in the spectrum of a sample under analysis, the driving radio frequency field being applied to the sample in a train of pulses in each binary sequence, the timing or phase of the pulses being changed in a stochastic manner in the sequence, the composite noise excited resonance signal being detected in a receiver and sampled in a multitude of time displaced intervals in correlation with the binary sequence and stored in an accumulative manner in the associated channels of a memory of subsequent processing, read-out and display, the receiver being activated during the time intervals between the application of the radio frequency pulses to the sample.

3,786,342
BATTERY DISCHARGE INDICATORS

Lindsay Molyneux, 4, Leazes Crescent, Newcastle-upon-Tyne, England

Filed June 7, 1972, Ser. No. 260,402
Claims priority, application Great Britain, June 11, 1971, 27531/71
Int. Cl. H02j *7/16;* **G01n** *27/46*
U.S. Cl. 324—29.5 **11 Claims**

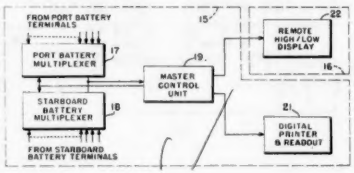


A current-compensated battery discharge indicator comprises voltage sensing means operable to provide an indication when the battery voltage falls below a predetermined value, and current sensing means adapted to sense a magnetic field generated by load current drawn from the battery and operable upon increase of the load current to lower the predetermined value of the voltage at which the voltage sensing means is operable to provide the said indication. The current sensing means may comprise a ring core of magnetic material through which passes a cable carrying the load current, and a magnetosensitive resistor disposed in an air-gap in the ring core.

3,786,343
BATTERY MONITOR SYSTEM

John G. Ehlers, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1973, Ser. No. 342,349
Int. Cl. G01m *27/02*
U.S. Cl. 324—29.5 **10 Claims**

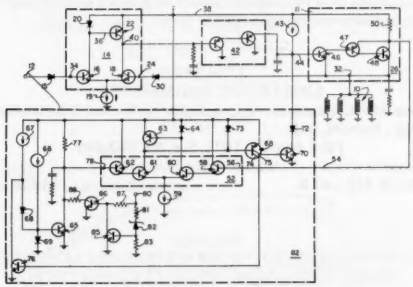


A monitoring system for a multicell storage battery periodically scans the voltage of each cell and indicates highest and lowest individual cell voltages. The system has provisions for a printout of the cell voltages of each cell to assist in locating defective cells.

3,786,344
VOLTAGE AND CURRENT REGULATOR WITH AUTOMATIC SWITCHOVER

William F. Davis, Tempe; Ronald W. Russell, Mesa; Thomas M. Frederiksen, Scottsdale, all of Ariz., and Ernest L. Long, San Jose, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 4, 1971, Ser. No. 185,939
Int. Cl. G05f *1/56, 1/60*
U.S. Cl. 323—20 **15 Claims**

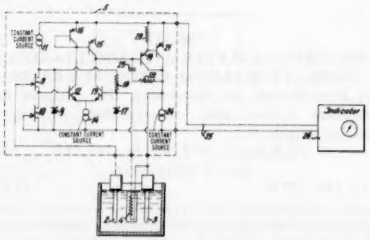


A system for energizing an inductive load includes a voltage regulator for providing a constant voltage across the load until the current builds up to a particular value, and a current regulator which then takes over to provide a constant holding current at a lower value. The voltage regulator may include a closed loop for holding the voltage across the inductive load constant or may respond to a regulated voltage value to control a power stage for providing a constant voltage. The voltage across a sensing resistor in the power stage controls the crossover from the voltage regulation mode, to the current regulation mode and the current regulator automatically resets the reference to control the power stage to provide a constant current of a lower value through the load. The system can be used to supply current to coils of injector valves in a fuel injection system, and may include two power stages for supplying current to two banks of coils. The regulator system is switched from one power stage to the other during successive 180° rotary positions of the engine for both stages.

3,786,345
MEASURING EQUIPMENT, ESPECIALLY FOR MEASURING THE PH-VALUE OF A LIQUID

Stig Glerup Mikkelsen, Herlev, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed June 18, 1971, Ser. No. 154,511
Int. Cl. G01n *27/42;* **G01r** *19/18*
U.S. Cl. 324—30 R **6 Claims**

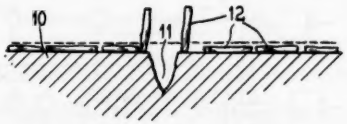


A measuring equipment is disclosed, in which a physical quantity to be measured is transformed into an electrical magnitude, such as a voltage or a current, and as such amplified in an amplifier and transferred via a two-wire cable to a device for indicating, recording or in other ways utilizing the result of the measurement, wherein the transfer cable simultaneously is used to supply the power to the amplifier in that the information concerning the measurement is converted into a current forming part of the supply current to the amplifier. Further disclosed in such equipment, is a galvanic separation which is provided in the two-wire cable for supplying power to the amplifier and for transferring the information to the utilizing device.

3,786,346
METHOD FOR DETECTING DEFECTS USING MAGNETIC PARTICLES IN A VISCOUS FLUID THAT RESTRICTS THEIR MOBILITY

Donald E. Lorenzi, Des Plaines, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Mar. 6, 1973, Ser. No. 338,456
Int. Cl. G01r *33/12*
U.S. Cl. 324—38 **6 Claims**

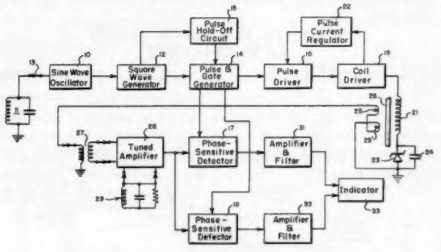


Method and composition for detecting defects in a magnetizable test piece which involves applying over the surface of the test piece a relatively viscous slurry of ferromagnetic flakes, preferably in an oily medium, the slurry being sufficiently viscous to restrict lateral mobility of the flakes while permitting rotary movement of the flakes, magnetizing the test piece, and thereafter inspecting the test piece to determine the existence of surface flaws denoted by rotation of the flakes due to reorientation thereof by any stray fields present at defects in the test piece.

3,786,347
APPARATUS FOR GENERATING STABLE DRIVING PULSES FOR AN EDDY CURRENT TEST SYSTEM

Sven E. Mansson, Hollviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,140
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **10 Claims**



Pulses for energizing an eddy current test coil assembly are produced by apparatus comprising a sine wave oscillator feeding a square wave generator, and a pulse generator and pulse hold-off circuit which produces output pulses corresponding to regularly recurring non-sequential excursions of one polarity of the square wave. The hold-off circuit includes a flip-flop which is reset at the trailing edges of the output pulses, and set at edges of the square wave next preceding the output pulses. The output pulses drive a test coil assembly for inducing eddy

currents in an object under test and producing output signals varying with defects or flaws therein. The output signals pass to an amplifier tuned to the PRF of the pulses and then to a pair of gated phase-sensitive detectors Quadrature gates are developed from the hold-off circuit and a second similar circuit at times precisely related to the output pulses.

3,786,348

PIEZO ELECTRIC ACCELEROMETER PULSE TESTING

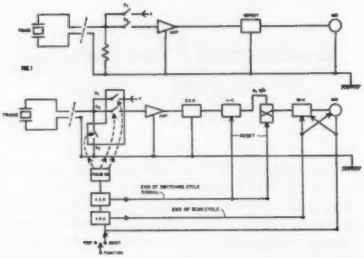
Derek Leigh Lynas, Fribourg, Switzerland; Alan Howard Lock, Belper, and Paul Houghton, Alfreton, both of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 1, 1971, Ser. No. 194,367

Claims priority, application Great Britain, Oct. 30, 1970, 51694/70

Int. Cl. G01r *29/22*

U.S. Cl. 324—56 **49 Claims**



Method and apparatus for remotely indicating whether a piezoelectric transducer is properly connected in circuit and in an operable state. An input pulse is applied to the transucer and a resulting response above a predetermined threshold level drives an indicator to show the integrity of the transducer apparatus. Special digital counting techniques are used for rejecting spurious noise responses and insuring that indications of operability are truly reliable.

3,786,349

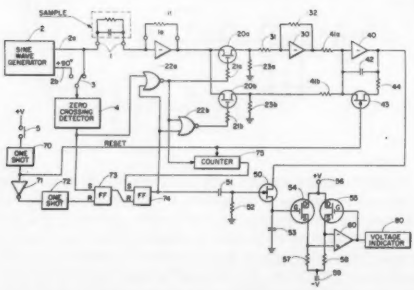
ELECTRICAL REACTANCE AND LOSS MEASUREMENT APPARATUS AND METHOD

Tibor Francis Devenyi, Carp, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed May 3, 1973, Ser. No. 356,956

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **14 Claims**



An instrument, for measuring the electrical reactance and loss characteristics of a sample, includes a means for applying an alternating electrical signal across the sample and deriving therefrom a voltage signal having a phase and magnitude relationship with the electrical signal, according to the reactance and loss characteristics of the element and a means for synchronously rectifying the voltage signal. An integrator produces an integral of the rectified voltage, the value of which is indicative of the value of one of the characteristics. The measurement is obtained at the end of one or more full cycles of the alternating electrical signal. The instrument is operable over a wide range of frequencies, for example from 0.01 Hz to 100 KHz. It is particularly useful at very low frequencies as it provides measurements more quickly than a typical reactance bridge or phase meter.

3,786,350

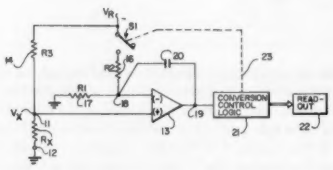
LINEAR INPUT OHMMETER

Irwin Munt, Elizabeth, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Aug. 21, 1972, Ser. No. 282,019

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 R **4 Claims**



A digital ohmmeter having a differential amplifier with a capacitor connected between the output and the inverting input to form an integrator. A source of DC voltage is connected to a series circuit including the unknown resistor and to a switch which selectively connects the source to a second series circuit, an intermediate point of which is connected to the inverting terminal of the amplifier. The unknown resistor is connected to the noninverting input. The output of the amplifier is connected to logic circuit and counting means of the type used in dual slope integrating digital voltmeters, and others such as voltage-to-frequency converters, with the logic means having an output to control the switch means. The switch is open for a fixed interval and closed for a variable interval, which variable interval is counted as a measure of the input resistance. In this embodiment, the two series resistance circuits form a bridge when the switch is closed. In a second embodiment an additional switch connects the second series circuit to ground when it is disconnected from the source. In either embodiment the resistance value is linearly proportional to the length of the variable interval of time multiplied by a constant, the constant being determined by the fixed resistors in the two series circuits.

3,786,351

SPECTRUM ANALYZER WITH SIMULTANEOUS DISPLAY FOR PLURAL FREQUENCY BANDS

Henry Fred Priebe, Jr., Dunwoody, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

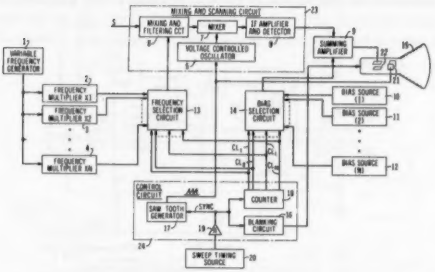
Filed July 7, 1972, Ser. No. 269,512

Int. Cl. G01r *23/16*

U.S. Cl. 324—77 B **11 Claims**

A spectrum analyzer which generates a frequency spectrum signal for each of a plurality of frequency bands in an input signal and displays all generated frequency spectrum signals simultaneously is disclosed. Specifically, the spectrum analyzer disclosed utilizes a mixer to heterodyne an input signal with a selected multiple of a base frequency. Time-shared apparatus is then used to scan a selected band of

frequencies in the filtered signal output of the mixer. The resulting signal is detected and summed with a bias level

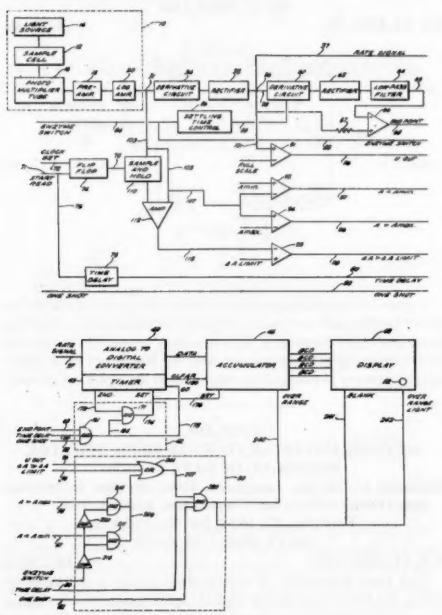


selected from a plurality of bias levels and is displayed during one sweep of an oscilloscope screen.

3,786,352
RATE ANALYSIS SYSTEM WITH OVERRANGE SIGNAL DETECTION CIRCUIT FOR IDENTIFYING FALSE SIGNALS

Thomas C. Woods, and Robert A. Ray, both of Fullerton, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 17, 1972, Ser. No. 244,538
Int. Cl. G01r *1/00, 15/08*
U.S. Cl. 324—110 **5 Claims**

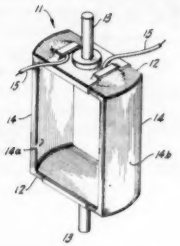


A rate analysis instrumentation system is disclosed including a sample cell and detection means for producing an electrical cell signal proportional to a parameter of a sample reacting within the cell. In a preferred embodiment the parameter comprises the enzyme activity of a sample, measured by the light absorbance characteristics of the sample. Electrical means are provided for differentiating the electrical cell signal to obtain a rate signal, and display means are provided for displaying the rate signal or a value determined therefrom, such as enzyme activity or concentration. A constant rate detection circuit is provided to permit measurement of the rate signal only during periods when the reaction rate and the cell signal are linear. The constant rate detection circuit includes electrical means for differentiating the rate signal to derive a second derivative signal to a threshold value to determine when the second derivative signal approaches zero. Since a zero second derivative signal indicates that the rate signal is constant and the cell signal is linear, the second derivative signal is used to initiate a predetermined operation of measurement and display means in the instrument. An overrange protection circuit is also disclosed for excluding false rate signals, such as signals having characteristics that fail to meet predetermined acceptable limits. The overrange protection circuit includes means for comparing the rate signal with predetermined upper or lower amplitude limits, as well as with a total deviation limit. An overrange signal and a blank signal are produced upon departure of the rate signal from any of the predetermined limits, which signals control the measurement and display means.

3,786,353
COIL FORMING APPARATUS METHOD AND GALVO-MOTOR PRODUCT

John Y. Pun, 10601 San Pablo Ave., El Cerrito, Calif.

Filed Mar. 30, 1972, Ser. No. 239,655
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 **3 Claims**



A contour molded galvo-motor coil together with the forming apparatus and the specific method of manufacture. A low inertia coil is formed which also allows a smaller air gap in the magnetic circuit of the galvo-motor. The associated improvement in galvo-motor efficiency results from the inverse square relationship between flux density and length of air gap. The formed coil is shaped as a section of a thin walled circular cylinder and impregnated with a compound during winding which when cured provides a rigid unitized coil structure. The low mass resulting from the absence of the conventional coil form and the high rigidity afforded by the coil shape and impregnation compound eliminate torsional deformation during operation and provide a galvo-motor having high efficiency and accuracy.

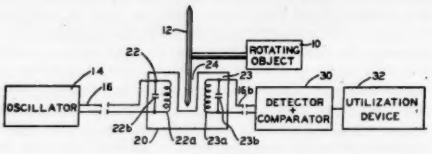
3,786,354
ELECTROMAGNETIC TACHOMETER

Ronald J. Lasky, Wheat Ridge, Colo., assignor to Stock Equipment Company, Cleveland, Ohio

Filed Jan. 24, 1972, Ser. No. 220,091
Int. Cl. G01p *3/48*
U.S. Cl. 324—173 **12 Claims**

A tachometer system in which a carrier signal is transmitted to a speed sensing and transmission-line-length compensating device. Bursts of the carrier signal are relayed by the device to a detector and comparator circuit where a signal is recovered indicating the rate at which objects pass the speed sensing

device. A method of compensating for differences in transmission line length in different systems by tuning the speed sensing device to a resonant frequency greater than the



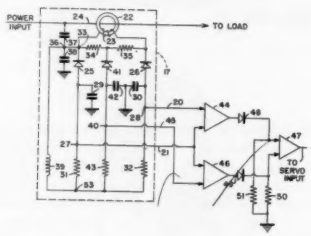
frequency of the carrier signal. Increased transmission line length causes the resonant frequency of the line including the device to approach the frequency of the carrier signal and improve the gain of the transmission line.

3,786,355

RADIO FREQUENCY RESISTANCE DISCRIMINATOR HAVING DEAD ZONE OUTPUT CHARACTERISTIC

James C. Midkiff, Cincinnati, Ohio, assignor to Cincinnati Electronics Corporation, Evendale, Ohio

Filed Dec. 28, 1971, Ser. No. 212,915
Int. Cl. H04b *1/04*
U.S. Cl. 325—174 **6 Claims**



Herein disclosed is an improved loading discriminator for sensing the resistive component of impedance at the input of an antenna coupler. This discriminator provides a first error signal derived through conventional current and voltage sampling techniques. It also provides a second error signal. These error signals are applied to differential amplifier stages in such a way that the resultant control signal has a negative portion derived from the second error signal and a positive portion derived from the first error signal, said portions being separated by a dead zone.

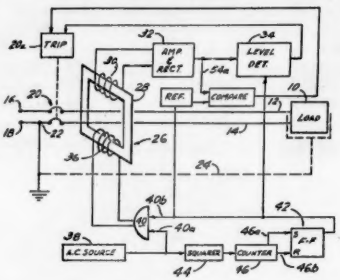
3,786,356

GROUND FAULT DETECTOR

Colin A. A. MacPhee, West Hill, Ontario, Canada, assignor to Federal Pacific Electric Company, Newark, N.J.

Continuation of Ser. No. 180,572, Sept. 15, 1971, abandoned.
This application June 30, 1972, Ser. No. 268,093
Int. Cl. H02h *3/26*
U.S. Cl. 317—18 D **8 Claims**

Ground fault protectors commonly use a differential current transformer for sensing ground-fault current, and a level detector causes opening of the load circuit in response to ground-fault current above a tripping level. A current loop develops around the core of the differential transformer in case a fault develops between the "white" or neutral load-circuit conductor and the ground-return current path, this loop having the effect of reducing the sensitivity of the ground-fault sensing means. A test signal is applied to the differential transformer at frequent short intervals, and tripping of a load-circuit interrupter results if such reduced sensitivity should develop. The level detector is made less sensitive during application of the test signal, to prevent opening of the load circuit



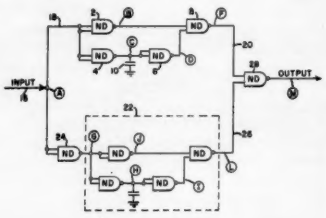
in response to the test signal, but even during the test-signal intervals the level detector remains responsive to greater-than-minimum ground-fault signals. The circuit interrupter opens in case of reduced sensitivity of the ground fault sensing means due to any cause.

3,786,357

DIGITAL PULSE TRAIN FREQUENCY MULTIPLIER

Albert P. Belle Isle, Pittsfield, Mass., assignor to General Electric Company

Filed Nov. 30, 1971, Ser. No. 203,357
Int. Cl. H03k *5/00*
U.S. Cl. 328—38 **8 Claims**



A pair of digital differentiators respectively generate pulses at the leading and the trailing edges of an input pulse, doubling the pulse input frequency. This doubling is used for reduction of errors in digital transmission and for frequency multiplication by powers of two and by values other than powers of two.

3,786,358

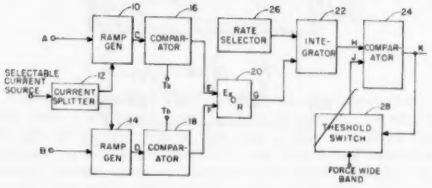
METHOD AND APPARATUS FOR DETECTING THE BEGINNING OF DATA BLOCK

Benjamin C. Fiorino, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,955
Int. Cl. H03k *5/18, 5/153*
U.S. Cl. 328—138 **12 Claims**

The base frequency of digital data signal is detected by using the transitions in the digital signal to control the duration of ramp signals generated by ramp generators. One ramp is restarted by each positive transition while a second ramp is restarted by each negative transition. Comparators monitor each ramp and compare the ramp against a threshold level. The threshold is set so that the comparator will change its state of output at a time period $T=\frac{1}{2}f$ where f is the base frequency of the expected data signal. The outputs from the two comparators are exclusive-OR'd to produce a signal

whose duration is a measure of the frequency departure of the input data signal from the expected data frequency. The output of the exclusive-OR is integrated to obtain an average DC voltage level which is a measure of the frequency of the input data signal. This average DC level varies linearly with the departure of the input data frequency from the expected data frequency. The output of the integrator is compared against a



threshold by a comparator. This comparator generates an output signal indicating when the frequency of the input data signal is approaching the expected data frequency, i.e., the condition of beginning of record or beginning of data block. The threshold used by this last comparator may be adjusted to change the selectivity or bandwidth of frequencies that will result in the apparatus detecting the beginning of a data record.

3,786,359

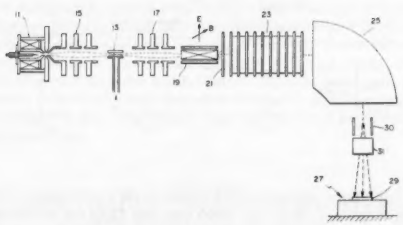
ION ACCELERATOR AND ION SPECIES SELECTOR

William J. King, Reading, Mass., assignor to Alpha Industries, Inc., Woburn, Mass.

Filed Mar. 28, 1969, Ser. No. 811,361

Int. Cl. H01j *23/10, 37/26*

U.S. Cl. 328—233 **10 Claims**



The apparatus disclosed herein provides high energy positive ions, suitable for semiconductor doping, by projecting positive ions through an electron stripping gas at relatively low energy thereby to obtain positive ions which are multiply ionized or charged. Those ions which are raised to a preselected ionization level or state are segregated, and then accelerated by a relatively high accelerating voltage to achieve an energy suitable for ion implantation in a semiconductor matrix. Since the ions subjected to the relatively high accelerating voltage are multiply ionized, the energy imparted thereto, measured in electron volts, is substantially equal to an integer multiple of the accelerating voltage.

3,786,360

SYSTEM FOR DEMODULATING PULSE-NUMBER-MODULATED BINARY SIGNALS

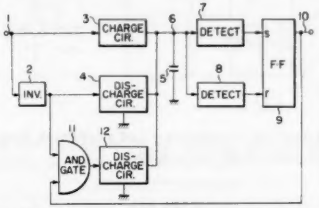
Ryuichi Kawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 213,332, Dec. 29, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,210

Claims priority, application Japan, Dec. 31, 1970, 45-123405

Int. Cl. H03k *9/06*

U.S. Cl. 329—104 **11 Claims**



A demodulation system is provided in which the pulse-number-modulated binary signals for example "1" and "0" which are represented by the existence and absence of a predetermined number of successive pulses, respectively, are demodulated by use of the charging and discharge of a capacitor. When one of the pulse-number-modulated binary signals, for example "1," is demodulated, the discharge of the charged capacitor is made slower than that of the prior art system, whereas the discharge of the capacitor is made at the high speed when the other pulse-number-modulated binary signal, for example, "0" is demodulated.

3,786,361

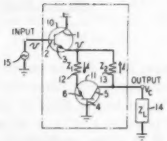
BROADBAND AMPLIFIER

Henry Richard Beurrier, Chester Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 18, 1972, Ser. No. 289,822

Int. Cl. H03f *3/68*

U.S. Cl. 330—20 **4 Claims**



The band-limiting effects of parasitics are minimized in a two-stage amplifier wherein the active elements are operated in the common collector and the common base configurations. A pair of impedances Z_1 and Z_2 connect the emitter of one of the transistors to the emitter and the collector, respectively, of the other transistor. The collector of the latter transistor serves as the amplifier output terminal. Operating into a high impedance output load, the gain of the amplifier is given by $(Z_2/Z_1 + 1)$.

3,786,362

BALANCED OUTPUT OPERATIONAL AMPLIFIER

Douglas George Marsh, Freehold, and Thomas Gerald Maxfield, New Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

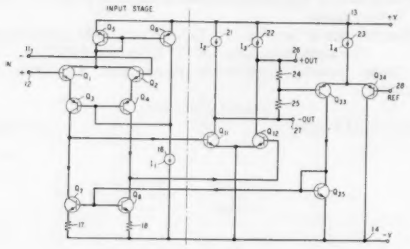
Filed Feb. 7, 1972, Ser. No. 224,040

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **4 Claims**

An operational amplifier which provides a balanced output signal and whose differential input stage utilizes active loads.

A common mode signal is derived from the balanced output signal and used via a comparator and a feedback loop to control the operation of the active loads.



3,786,363

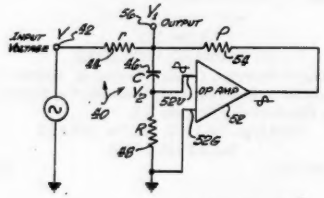
VOLTAGE-CONTROLLED LOW-PASS FILTER

Arthur S. Lelie, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1973, Ser. No. 321,185

Int. Cl. H03f *3/04, 1/36*

U.S. Cl. 330—31 **6 Claims**



ACTIVE LOW-PASS FILTER.

An active low-pass filter whose cutoff frequency is a function of the input voltage to the filter comprising a series connection from the input to the filter to ground which consists of: (1) an input resistor *r*, (2) a capacitor C, and (3) a grounded resistor R. A series connection across the capacitor C comprises: (*a*) a feedback amplifier having two input leads, one of which is grounded, the other lead being connected to that side of the capacitor nearest ground; and (*b*) a feedback resistor ρ, one end being connected to the output of the feedback amplifier, the other end being connected to the ungrounded side of the capacitor. The feedback amplifier may be an operational amplifier. The output of the filter is at the junction of the resistors *r* and ρ and the capacitor C.

3,786,364

SEMICONDUCTOR AMPLIFIER PROTECTION

Carl F. Wheatley, Jr., Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

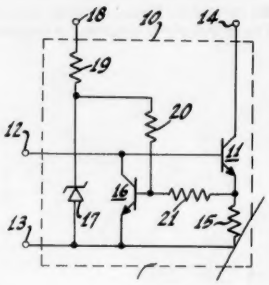
Filed Mar. 25, 1969, Ser. No. 810,225

Claims priority, application Great Britain, Sept. 27, 1968, 46153/68

Int. Cl. H03f *21/00*

U.S. Cl. 330—207 P **11 Claims**

A protection transistor is connected between the input electrodes of a transistor amplifier. A fixed bias voltage approximately equal to the base-emitter threshold of conductivity of the protection transistor and a voltage porportional to the current through the amplifier transistor are applied between the base and emitter electrodes of the protection transistor.



3,786,365

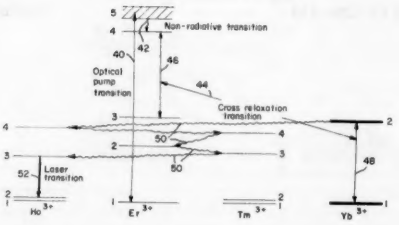
LASER MATERIALS FROM CALCIUM FLUORIDE - RARE EARTH FLUORIDE EXPANDED LATTICE STRUCTURES

Morton Robinson, Malibu, and Donald P. Devor, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 875,127, Nov. 10, 1969, abandoned, which is a division of Ser. No. 607,041, Jan. 3, 1967, abandoned. This application Apr. 26, 1972, Ser. No. 247,539

Int. Cl. H01s *3/16, 3/06;* **B01j** *17/00*

U.S. Cl. 331—94.5 **10 Claims**

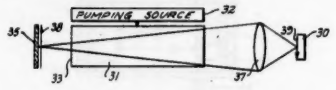


Stimulated emission at the approximate wavelengths of 840 nm, 1860 nm, 2050 nm, 2690 nm, and 2830 nm is obtained from birefrigent laser single crystals of calcium fluoride and the fluorides selected from the trivalent rare earth elements. Each crystal has a structure which deviates from the cubic lattice structure of calcium fluoride and tends toward the hex agonal lattice structure of the rare earth fluorides. The deivation in crystal structure is generally produced by increasing the percent by weight of the rare earth fluoride in excess of 3% and up to 50% of the crystalline solution. Examples of the fluorescent composition include CaF_2:xErF_3:yYbf_3 zTmF_3wHoF_3, where *x* varies from 3% to 50%, *y* varies from 0% to 3%, *z* varies from 0% to 3% and *w* varies from 0% to 3% (all percent by weight). Other rare earth ions, having absorption bands which overlap the output spectum of the pumping means over a wide region, may be used in place of erbium ions.

3,786,366
SUPER RADIANT LASER ILLUMINATOR AND IMAGE AMPLIFIER

Robert J. L. Chimenti, 2265 Ocean Pky., Brooklyn, N.Y., and Paul Rabinowitz, 10 Foxwood Rd., Old Bethpage, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,706
Int. Cl. H01s *3/09, 3/00*
U.S. Cl. 331—94.5 **27 Claims**

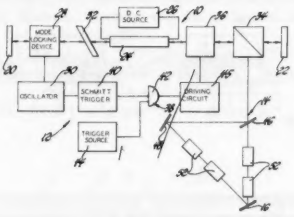


A device is described in which amplified spontaneous emission from a high-gain laser medium illuminates an object through an optical system that also serves to collect the reflected or scattered light from the object and return it through the laser medium to form a highly amplified image. By modification of the optical system and control of the gain factor, the invention can be adapted for various uses including projection or etching of the amplified image on a substrate.

3,786,367
HOLOGRAPHIC SYSTEM

David M. Shupe, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 19, 1971, Ser. No. 190,473
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 C **4 Claims**



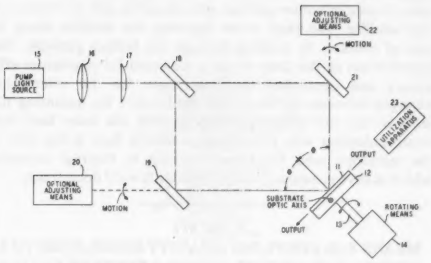
A holographic system employing a laser having a continuous wave lasing medium. The laser has at each end of its cavity mirrors of substantially 100 percent reflectivity. Pulses of laser energy within the cavity are mode-locked and mode controlled to provide pulse width control. Then the pulses are of a certain polarization and also when located in a certain region of the cavity they are ejected from the cavity at a controlled repetition rate.

3,786,368
PLANAR WAVEGUIDE-TYPE DISTRIBUTED FEEDBACK LASER WITH ANGULAR TUNING

John Ernst Bjorkholm; Charles Vernon Shank, both of Holmdel, and Thomas Patrick Sosnowski, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1972, Ser. No. 299,257
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **5 Claims**

There is disclosed a distributed feedback laser made in an active thin film optical waveguide deposited on an anisotropic substrate of which the ordinary and extraordinary indices are lower than the film index. The laser is tunable by changing the direction of the pumping fringes or other spaced perturbations that produce the distributed feedback scattering with respect to the substrate optic axis. The change in direction of the pumping fringes or effective perturbation also changes the direction of propagation of laser light relative to the substrate optic axis and changes the optical fringe spacing without



changing the free-space fringe spacing. Narrow-line single-mode tunable oscillation has been obtained.

3,786,369
LASER DYE COMPOSITION

Karl H. Drexhage; George A. Reynolds, and Donald P. Specht, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

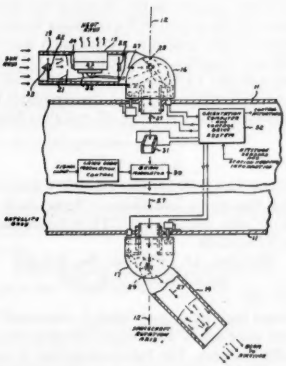
Filed Dec. 27, 1972, Ser. No. 319,086
Int. Cl. H01s *3/20*
U.S. Cl. 331—94.5 **7 Claims**

This invention relates to the use of rigidized pyrylium, benzopyrylium, and xanthylium dyes as lasing media in dye lasers. Lasing media containing certain of these dyes have advantageously been found to lase in the red and near infrared region of the electromagnetic spectrum.

3,786,370
SPACEBORNE SUN PUMPED LASER

James D. Barry, Fairborn; Paul M. Freedman, Wright-Patterson AFB, and George Matassov, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 340,515, March 12, 1973.
This application May 1, 1973, Ser. No. 356,270
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **6 Claims**



An improved sun pumped laser communication system for synchronous satellites in the galactic plane is provided by mounting the sun pumped laser in a sun tracking telescope

pivoted in hollow gimbals placed on the axis of rotation of the satellite. The laser beam is directed to the earth or another spacecraft receiver from the satellite by a tracking telescope also pivoted in hollow gimbals placed on the axis of rotation of the satellite. The laser beam traverses the satellite along its axis of rotation by passing through the hollow gimbals. The polarization of the laser beam is adjusted for maximum efficiency and controlled to compensate for the orientation changes between the laser and modulator. By mounting the laser in the sun tracking telescope with the laser heat sink communicating with a thermally emissive face in the side of the telescope tube, the laser is cooled by thermal radiation which is always automatically directed toward deep space.

3,786,371

MEANS FOR COUPLING A CAVITY RESONATOR TO A CONDUCTOR CIRCUIT AND/OR A FURTHER CAVITY RESONATOR

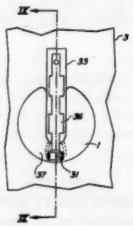
Jozef Hadbavny, and Peter Fuglister, both of Zurich, Switzerland, assignors to Siemens-Albis AG, Zurich, Switzerland

Filed Sept. 7, 1972, Ser. No. 287,031

Claims priority, application Switzerland, Oct. 14, 1971, 015080/71

Int. Cl. H01p *5/02, 5/08, 7/06*

U.S. Cl. 333—24 R **3 Claims**



Means for coupling a cavity resonator to a conductor circuit and/or a further cavity resonator wherein a coupling window or opening is present at the wall between the cavity resonator and the conductor circuit and/or the further cavity resonator. According to the invention the coupling window or opening possesses a cross-section which at least approaches a U- or V-shape having a tongue, the axis of symmetry of which is at least approximately parallel to the vector of the electrical field of the resonator at the region of the coupling window or opening. The length of the tongue is chosen such that the tongue together with the coupling window forms a λ/4 resonant circuit working with the TEM-mode. The method of tuning the coupling according to the invention contemplates bending or rotating the tongue so as to change the coupling factor.

3,786,372

BROADBAND HIGH FREQUENCY BALUN

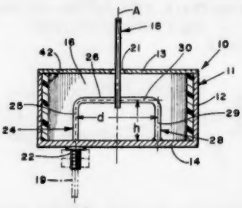
James J. Epis, Sunnyvale, and Samuel Chung-shu Kuo, Cupertino, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Dec. 13, 1972, Ser. No. 314,835

Int. Cl. H03h *7/38, 7/42*

U.S. Cl. 333—26 **4 Claims**

A broadband high frequency balun is connectable between balanced and unbalanced transmission lines so that these lines are essentially colinear. The balun comprises a coaxial cable and a shorted stub in approximately a half-loop configuration, the balanced line being connected to the cable and stub within a conductive housing or shield. The cable-stub spacing is substantially greater than the effective length of the stub, thereby decreasing the lower frequency operating limit of the balun. The addition of a lossy layer to the inner surface of the housing permits a substantial increase in the operating bandwidth



of the balun by suppressing adverse resonance effects within the housing.

3,786,373

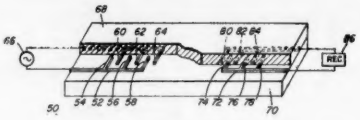
TEMPERATURE COMPENSATED ACOUSTIC SURFACE WAVE DEVICE

Manfred B. Schulz, Sudbury, and Melvin G. Holland, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 1, 1971, Ser. No. 185,601

Int. Cl. H03h *7/30, 9/30*

U.S. Cl. 333—30 R **25 Claims**



A temperature compensated acoustic surface wave device, such as a surface wave delay line is provided in which temperature compensation is provided by the deposition of an interdigital electrode structure on a substrate with an overlay film surface of piezoelectric material of a predetermined thickness. A double substrate arrangement is also disclosed in which the interdigital electrode structure is deposited upon the surface of a non-piezoelectric layer which in turn is placed upon the surface of a piezoelectric substrate.

3,786,374

VARIABLE RESISTIVE FILM ATTENUATOR

Dietrich E. Bergfried, Potomac, Md., assignor to Weinschel Engineering Co. Inc., Gaithersburg, Md.

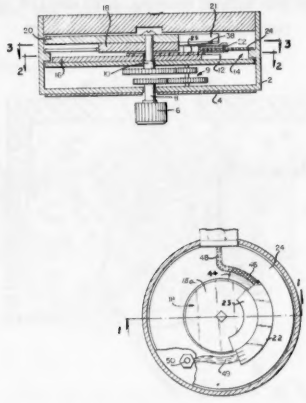
Filed June 26, 1972, Ser. No. 266,366

Int. Cl. H01p *1/22*

U.S. Cl. 333—81 A **7 Claims**

A continuously variable resistive film attenuator (often called "card attenuator" is provided, having distributed shunt and series film portions for use from D.C. above 8 GHz. It has a low minimum loss. It stays matched over its entire range. In one version it has substantially no incremental phase shift with changing attenuation. The resistive film is enclosed inside a slidable conductive sleeve which is moved to expose only that part of the attenuator which is inserted into the circuit, the unused part thus being in a field-free region where it can have no effect, while the inserted part of the shunt film is connected to ground through a continuous ground contact which is pressed down on the edge of the shunt portion by a multiple finger spring arrangement. In one version, the electrical length

between input and output is maintained constant by shortening a conductive portion of the attenuator as the resistive portion is lengthened so that there is no phase shift between input and output as the attenuation is varied.



3,786,375

PACKAGE FOR MOUNTING SEMICONDUCTOR DEVICE IN MICROSTRIP LINE

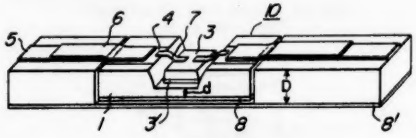
Hitoshi Sato, Tokyo; Mitsuo Tanaka; Michiharu Nakamura, both of Hachioji-shi; Susumu Takahashi, Kokubunji-shi, and Hirokazu Kurono, Hachioji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1971, Ser. No. 137,479

Claims priority, application Japan, Apr. 27, 1970, 45/35413

Int. Cl. H01p *3/08*; **H05k** *1/08*

U.S. Cl. 333—84 M **12 Claims**



In a microstrip line, a package for mounting a required semiconductor device between a pair of blocks of dielectric material disposed on a first conductive plate to be spaced apart a predetermined distance from each other in the longitudinally extending direction of the first conductive plate. The package is provided with electrical leads on its upper surface for establishing an electrical connection between second conductive plates disposed on the upper surface of the dielectric blocks opposite to the first conductive plate.

3,786,376

SELF-LUBRICATED ROTARY JOINT

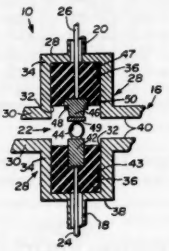
Robert E. Munson; Jerry H. Polson, and Kent G. Roller, all of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Dec. 18, 1970, Ser. No. 99,483

Int. Cl. H01p *1/06*

U.S. Cl. 333—97 R **6 Claims**

An assembly for electrically coupling a first coaxial cable to a second coaxial cable for rotation relative to one another is disclosed and generally comprises a pair of sub-assemblies which electrically connect the inner and outer conductors of the first cable to respective inner and outer conductors of the second cable while substantially eliminating frictional wear therebetween.



3,786,377

PLUG FITTING FOR HF TRANSMISSION LINES

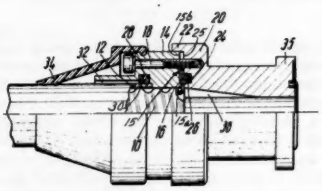
Georg Spinner, Erzgiessereistrasse 33, Munich, Germany

Filed Apr. 19, 1972, Ser. No. 245,563

Claims priority, application Germany, Apr. 19, 1971, P 21 18 940.2

Int. Cl. H01p *1/04, 5/02*

U.S. Cl. 333—98 R **13 Claims**



Plug fitting for corrugated wave guides and coaxial HF corrugated casing cable: the end of the wave guide casing is crimped over and extends radially outward between a holding ring positioned over the wave guide and a shaped part positioned over the cable; the holding ring includes a radially short height projecting step which presses against the radially inward portion of the crimped over wave guide end; the crimped over end extends past the step and at least partly over a sealing ring in a groove of the facing surface of the shaped part positioned over the casing cable.

3,786,378

ROTARY STEPPED JOINT FOR WAVEGUIDES

Mario Liguori, Milan, Italy, assignor to Elettronica Aster S.r.l., Milan, Italy

Filed Dec. 18, 1972, Ser. No. 316,107

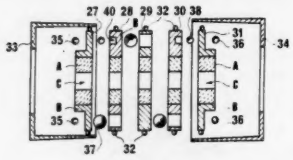
Claims priority, application Italy, Sept. 13, 1972, 29120 A/72

Int. Cl. H01p *1/06*

U.S. Cl. 333—98 TN **3 Claims**

Rotary stepped joint for waveguides of radar antennas, comprising stacks or packs of plates rotating on ball bearings, wherein the plates are spaced apert from one another and interconnected only by sets of balls, on which the plates are firmly compressed. The rotation of the first plate in the plate

stack or pack causes by means of the balls interposed between the plates a rotation of proportionally decreasing angles for



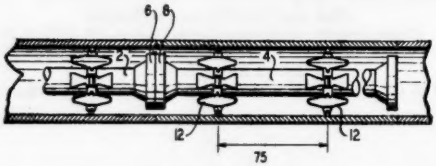
the subsequent plates. The joint is of a very simple structure and can be rotated by a substantially reduced strain.

3,786,379

WAVEGUIDE STRUCTURE UTILIZING ROLLER SPRING SUPPORTS

Milton Lutchansky, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Mar. 14, 1973, Ser. No. 341,286
Int. Cl. H01p 1/30; F16l 7/00
U.S. Cl. 333—98 R **10 Claims**



A waveguide structure utilizes roller spring supports for supporting a waveguide in a conduit to simultaneously provide a compliant support and allow free relative longitudinal movement between the waveguide and the conduit. A tension band having a plurality of spring assemblies integrally formed therewith is fastened about the periphery of the waveguide. Rollers are mounted on the spring assemblies in contact with the conduit to allow free relative longitudinal movement of the waveguide and conduit. The spring assemblies provide a soft compliant support throughout a range of deflections accommodating the worst expected thermal loading conditions in route bends. Under higher loading the spring assemblies bottom out and provide a stiff support to prevent further radial deflection of the waveguide with respect to the conduit.

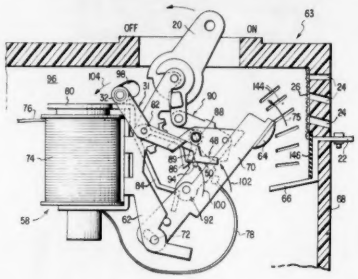
3,786,380

MULTI-POLE CIRCUIT BREAKER

George Sullivan Harper, Cambridge, Md., assignor to Airpax Electronic, Inc., Cambridge, Md.

Filed Feb. 16, 1973, Ser. No. 333,296
Int. Cl. H01h 73/02
U.S. Cl. 335—9 **18 Claims**

A multi-pole circuit breaker is disclosed which allows selective manual making and breaking of contacts within the breaker and automatic simultaneous breaking of all breaker contacts whenever a current overload condition occurs at any of the poles of the circuit breaker. The selective and automatic breaking function is accomplished by an interlocking trip shoe assembly comprised of a number of trip levers associated, one each, with a pole of the circuit breaker. Each trip lever is cammed by the movement of the movable contact associated with one of the poles in response to an overload condition at this pole to actuate the armatures associated with the other of the poles to open all other breaker contacts. When the circuit breaker switch associated with one of the poles is moved to an "off" position, a camming member is shifted to a cut away portion of the trip lever such that the trip lever is not cammed when the movable contact swings away from the fixed contact. This permits the breaking of the contacts of one pole without breaking of the contacts associated



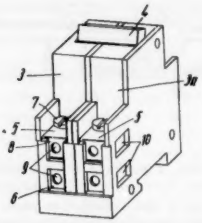
with the other of the poles. The breaker is provided with vent channels for venting arcing gases and a fine mesh screen in front of the vent channels which acts as a flame arrestor to prevent explosions.

3,786,381

MULTIPOLAR FAULT CURRENT PROTECTIVE SWITCH

Volker Schmitt, Eppelheim, and Walter Velten, Schwetzingen, both of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Germany

Filed Feb. 7, 1972, Ser. No. 223,921
Claims priority, application Germany, Feb. 13, 1971, G 71 05 414.3
Int. Cl. H01h 71/46
U.S. Cl. 335—13 **7 Claims**



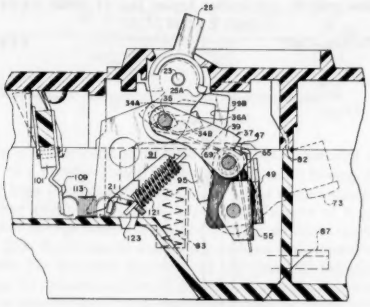
The switch comprises a summation current transformer unit containing a ground fault current testing part and a release part. Relatively narrow type automatic cutouts or circuit breakers are attached to the unit in juxtaposition thereto, and coupled mechanically and electrically to these parts. Each automatic cutout has, between the input and the output sides, two superposed externally accessible connecting points for interconnection with respective windings of the summation transformer. Each cutout has side walls with openings communicating with the connecting points and providing for insertion of the ends of the respective transformer winding into the cutout and into the connecting points thereof. The unit and the circuit breakers have identical profiles in side elevation and, when bolted together, are mounted in the same switch cabinet.

3,786,382

COMPACT CIRCUIT BREAKER

David B. Powell, Bristol, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,992
Int. Cl. H01h 9/24
U.S. Cl. 335—169 9 Claims



A compact electric circuit breaker with high current carrying ability is disclosed. This circuit breaker utilizes compact means to achieve high contact pressure necessary for high current carrying ability, and, in addition, utilizes a mechanical arrangement occupying a minimum amount of space and including a minimum number of force reducing members which cooperate to permit a relatively low trip force to actuate the circuit breaker and thus open the circuit upon the occurrence of a particular condition such as a current overload.

3,786,383

PERMANENT MAGNET SOLENOID DEVICE

John T. Ludwig, Jacksonville, and Paul D. Steiner, Clearwater, both of Fla., assignors to Electromagnetic Industries, Inc., Clearwater, Fla.

Filed Oct. 27, 1972, Ser. No. 301,315
Int. Cl. H01f 7/08
U.S. Cl. 335—231 10 Claims

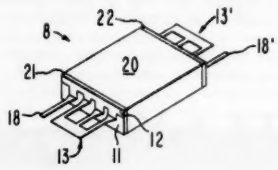
A pair of substantially identical high powered cylindrical magnets are arranged in axially aligned opposing relation in a cylindrical casing of non-magnetic material, with their facing ends spaced axially from each other. Each permanent magnet has a central cylindrical pole of one polarity, an annular pole of the opposite polarity and a base interconnecting its poles at the end remote from the other permanent magnet and forming the base of an open annular groove separating its two poles. An inner circular pole piece is interposed between the facing ends of the two cylindrical poles, and an outer annular pole piece is interposed between the facing ends of the annular poles, the two pole pieces defining an annular air gap having a very small radial dimension. A cylindrical winding form, of non-magnetic material and carrying a winding, is movably positioned substantially symmetrically in the air gap. A plurality, such as three, of angularly spaced pins of non-magnetic metal are connected to the winding form and extend outwardly through the annular groove of one permanent magnet and through dielectric bushings in the apertures in the base thereof. A fourth pin, constituting an electric conductor, terminates short of the winding form and is electrically connected at its inner end to one terminal of the winding and extends outwardly through a bushing in the base of the one permanent magnet for connection to a terminal of a source of electric potential. All of the pins, except the fourth pin, have their outer ends secured to a thin brass plate which is secured to a central pin or operator in turn secured centrally to a flexible diaphragm and projecting outwardly through an opening in the casing of the device. The fourth pin extends through the brass plate, with clearance. The air gap has a dimension of from 0.010 to 0.020 inches and, when the winding is energized, the operator will move 8 ounces through 0.1 inch with 6 millijoules of energy. The device is used as a trigger for missiles.

3,786,384

REED SWITCHING ASSEMBLY OF DEFORMABLE MATERIAL

James W. Jones, Hollister, Calif., assignor to Compac Engineering Inc., Hollister, Calif.

Division of Ser. No. 783,912, Dec. 16, 1968, Pat. No. 3,651,297. This application Mar. 20, 1972, Ser. No. 236,270
Int. Cl. H01h 51/28
U.S. Cl. 335—152 7 Claims



An electrical device and method of making same is disclosed wherein a rigid base member is provided for supporting electrical conductive elements and a thermal plastic member heat sealed thereto. A reed relay is described with blades mounted on a rigid ceramic base and hermetically sealed into a switching chamber by a thermal plastic cover member sealed at the periphery to the base member as by heating with a peripheral metal strip or sonic bonding. Localized deformation of the enclosure sets the gap of the contact blade. A blade is positioned in a slanted notch to spring bias the blade against another and the switching blade can be provided with a perforation filled with a previous metal contact material.

3,786,385

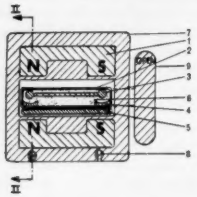
MAGNETO-MOTIVE BISTABLE SWITCHING DEVICES

Waldemar Helmut Kurpanek, Mercator Str. 3, Dusseldorf, Germany

Continuation-in-part of Ser. Nos. 149,174, June 2, 1971, abandoned, and Ser. No. 273,940, July 21, 1972. This application July 21, 1972, Ser. No. 273,941
Int. Cl. H01h 19/60
U.S. Cl. 335—207 7 Claims

A manually operable magneto-motive bistable manual switch comprising a hermetically sealed contact container

space having at least one pair of stationary contact points and one free floating ferro-magnetic contactor. The contact container and associated components are mounted rigidly within the magnetic flux fields of two rigidly mounted permanent magnets spaced apart so that unlike poles of each magnet face each other across a given distance. A rotatable keeper is disposed in said switch to form with the magnets two closed



ring flux fields. By rotating the keeper into the magnetic ring flux field of one permanent magnet the permanent magnet's magnetic flux field becomes directly shorted and thus the ferro-magnetic free floating contactor is attracted by the other permanent magnet to execute bistable switching operation within the contact container by establishing a bridging relationship between at least one pair of the stationary contact points.

3,786,386

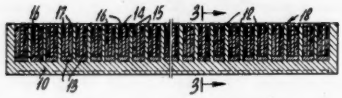
MAGNETIC ANCHORING DEVICE FOR GRAPHIC ARTS

Michele Cardone, Via Boschetto, 19, Trezzano S.N.; Angelo Grandini, Via Oratorio 44, Pero, and Bruno Zaramella, Via Cascina Barocco 18, Milan, all of Italy

Filed June 22, 1972, Ser. No. 265,198

Int. Cl. H01f *7/04*

U.S. Cl. 335—295 **8 Claims**



Magnetic anchoring device for graphic arts, wherein the magnetic work surface is provided by interposing permanent magnetic cores between ferromagnetic material pole-pieces, having a direction of magnetization for the cores substantially at right angles to said pole-pieces. The device comprises a support of ferromagnetic material having a plurality of parallel slots separated by walls defining a first plurality of pole-pieces fast with said support, a spacer of a magnetic material being placed in each of said slots, and each of said slots having therein a permanent magnet battery or unit comprising an inserted central wall or core of ferromagnetic material which is interposed between two side permanent magnetic elements. The assembly of said inserted walls define a second plurality of pole-pieces alternately interposed to the first plurality of pole-pieces. The surfaces of the magnetic elements contacting each of said inserted walls have always the same polarity, so that the magnetic surface being provided has pole-pieces of one polarity intercalated with pole-pieces of opposite polarity to said one polarity.

3,786,387

SHORT-CIRCUIT TESTING MODEL FOR STATIONARY INDUCTION APPARATUSES

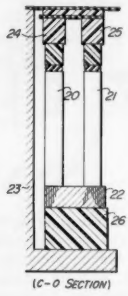
Yasuro Hori; Kiyoto Hiraishi; Tadashi Kiuchi, and Yoshitake Kashima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 794,862, Jan. 29, 1969, abandoned. This application July 14, 1971, Ser. No. 162,601

Claims priority, application Japan, Jan. 31, 1968, 43/5419

Int. Cl. H01f *27/30*

U.S. Cl. 336—181 **4 Claims**



A stationary induction apparatus in which the number of natural vibrations of a winding formed by winding an insulated conductor by a plurality of turns about a leg portion of an iron core is shifted from the power source frequency and the frequency which is double the power source frequency so as to prevent the winding from resonating with the latter freqeuncies and to reduce the electromagnetic force generated in the axial direction of the winding due to a short-circuit current which may flow into the apparatus winding and due to the leakage flux occurring in the apparatus, thereby to obtain a mechanically strong winding structure.

3,786,388

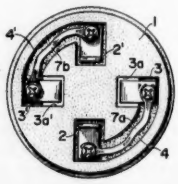
FUSE-TYPE CIRCUIT BREAKER

Katsuyasu Sato, 6, Mitsuya Kitadori 3-chome, Higashiyodogawa-ku, Osaka-shi, Japan

Filed May 27, 1971, Ser. No. 147,451

Int. Cl. H01h *85/16*

U.S. Cl. 337—269 **5 Claims**

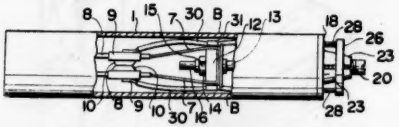


Fuse-type circuit breaker of small dimensions and of increased safety applicable especially to household uses, provided with a pair of blades and a pair of blade supports and a fuse connecting each individual blade to its corresponding blade support. One of the pair of fuses being responsive to current and the other being responsive to ambient temperature.

3,786,389
THERMOSTATIC SWITCH

Kenshi Kondo, 3-5 Ohkura 1-chome, Setagaya-ku, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,522
Int. Cl. H01h *37/04*
U.S. Cl. 337—389 **5 Claims**



There is disclosed a thermostatic switch consisting essentially of a tubular casing formed of a material having a relatively high coefficient of expansion and a circuit controlling member which is disposed therein and formed of a pair of metallic springs having a relatively low coefficient of expansion. This thermostatic switch is provided with means which permits the accurate response to the ambient temperature change i.e., means such as for preventing so called backlash or minute gap caused at the thread-engaging portions between the circuit controlling member and the casing, and it is provided with means which aids in enhancing the heat sensing of the circuit controlling member in co-operation with the sensing of the casing. In another aspect of the invention, there are provided means which can protect the lead wires connected to the circuit controlling member and the temperature adjusting lock screw from erroneous operations caused by inadvertent contact with or impingement on other moving substance such as a body or the like.

3,786,390
TEMPERATURE MEASURING RESISTANCE

Klaus Kristen, Wiesbaden, Germany, assignor to Jenaer, Glaswerk, Schott, and Gen., Wiesbaden, Germany

Filed Aug. 8, 1972, Ser. No. 278,828
Claims priority, application Germany, Aug. 9, 1971, P 21 39 828.7
Int. Cl. H01c *7/04*
U.S. Cl. 338—22 R **7 Claims**

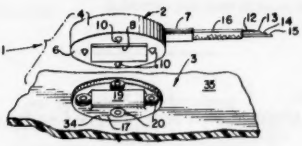
A temperature measuring resistance employing a composition whose electrical resistance varies with temperature. The composition is preferably a glass containing Al_2O_3, LiO_2 and SiO_2.

3,786,391
MAGNETIC SELF-ALIGNING ELECTRICAL CONNECTOR

William R. Mathauser, P. O. Box 5, Sun Valley, Idaho

Filed July 11, 1972, Ser. No. 270,709
Int. Cl. H01r *11/30*
U.S. Cl. 339—12 R **15 Claims**

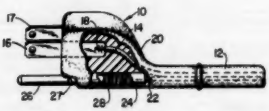
A magnetic self-aligning electrical connector comprising a pair of connector or coupling havles each having electrical contact means therein and one of said coupling halves having magnetic means therein disposed opposite means in said other coupling half for cooperation with said magnet means to hold said coupling halves together with the electrical contact means in electrically conducting contacting relationship with one another, said electrical contact means in one of said coupling halves mounted for movement relative to the coupling half to insure alignment between the electrical contact means even though the coupling halves are misaligned.



3,786,392
AUTOMATIC RETRACTABLE GROUND ELECTRICAL CONNECTOR

Johnny B. McDaniel, 4210 Stanby Ct., Alexandria, Va.

Filed Sept. 20, 1972, Ser. No. 290,506
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **13 Claims**

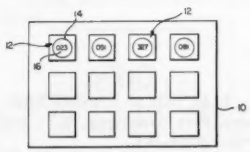


A three prong electrical connector or plug having a spring biased grounding prong of sufficient strength to retain the ground prong extended for insertion into a three way electrical outlet and to allow the ground prong to retract when the plug is inserted into a two way electrical outlet. For plugs having a relatively short longitudinal dimension, the grounding prong is made of telescopic sections. A small conductive strip is provided to be secured to the face plate screw of a two way electrical outlet so that the ground prong is grounded even in the retracted position.

3,786,393
IDENTIFICATION AND POLARIZATION OF MSI/LSI ASSEMBLY AND RECEPTACLE

Richard A. Conrad, Canoga Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 21, 1971, Ser. No. 145,807
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 C **7 Claims**



Means for coupling an electrical assembly having a plurality of connecting pins about the periphery thereof, to a receptacle

of similar dimensions having a plurality of pin receiving means about the periphery thereof; one of said assembly and receptacle having embossed on the under-surface an alpha-numeric symbol representative of the mating part, while the other one of said assembly and receptacle has engraved therein a reverse image of the alpha-numeric representation whereby said surfaces can mate in only one direction.

3,786,394

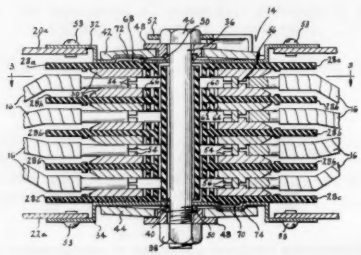
SINGLE-BOLT JOINT FOR FEEDER AND PLUG-IN BUS DUCTS

Martin F. Koenig; George A. Dempsey, Jr., both of Milwaukee, Wis.; Manuel Issa, deceased, late of Milwaukee, Wis., and Patrick T. Sheedy, administrator, Fox Point, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 22, 1972, Ser. No. 237,070

Int. Cl. H01r *13/60*

U.S. Cl. 339—22 B **9 Claims**



A projection on one side of each splice plate of the stacked joint assembly cooperates with an open-ended, L-shaped slot in the end of the corresponding bus bar to retain the joint assembly in place during assembly of a bus duct run and also secure the bus bars from sliding within the bus duct housing. An insulated sleeve, surrounding the bolt which extends through the stacked assembly, has an oval cross section and fits into a similarly shaped central aperture in each insulator plate. Each insulator plate has at least one raised rib portion wich is concentric with its central aperture. The outer insulator plates are keyed to respective end plates, positioned on the opposite ends of the stacked assembly, by a projection fitting into an indentation in the end plate. The raised rib portion of the insulator plates cooperates with an oval aperture in the splice plates to prevent relative rotational movement therebetween, thereby insuring tbe insulator and splice plates are properly oriented for installation of the joint assembly onto a duct section.

3,786,395

ELECTRICAL CONNECTOR

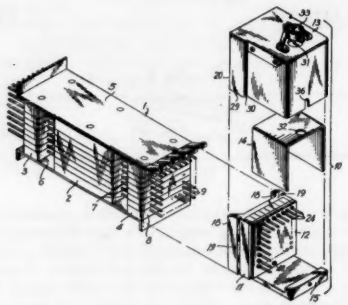
Paul V. DeLuca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,715

Int. Cl. H01r *13/20, 13/58, 13/40*

U.S. Cl. 339—66 M **20 Claims**

A connector designed to mate with a wire wrap terminal block, and to straighten any pins on the block which may be slightly bent at the time the connector is coupled to the block. The connector is arranged in such a manner that its cover may be removed to expose internal electrical joints within the connector without removing the connector from the terminal block and without disturbing the internal connector joints.



3,786,396

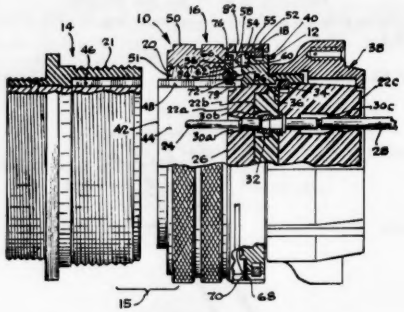
ELECTRICAL CONNECTOR WITH LOCKING DEVICE

Harry P. Kemmer, Woodstock, and Joseph A. Storcel, North Riverside, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 28, 1972, Ser. No. 248,647

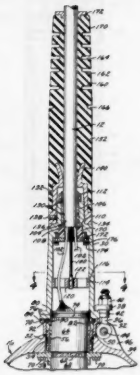
Int. Cl. H01r *13/54*

U.S. Cl. 339—89 R **9 Claims**



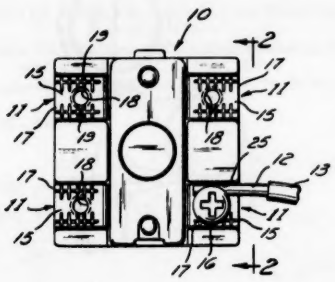
An electrical connector including plug and receptacle shells, a coupling ring rotatably mounted on one shell and arranged to be rotatably coupled to the other shell, and a locking device preventing rotation of the coupling ring with respect to the rotatably mounted shell. The locking device includes an axially compressible wave washer coupled to the coupling ring and an apertured lock ring axially movable towards the wave washer by action of the connector shell being coupled to force the detents into the apertures as the wave washer is compressed to prevent release by lower torques associated with vibrational effects. The lock ring also includes resilient plastic sealing rings which engage the two shells during coupling action and provide a seal across the shells.

3,786,397
CABLE TERMINATION
Robert M. Bridges, Northridge, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.
Filed Sept. 18, 1972, Ser. No. 290,202
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 M 21 Claims



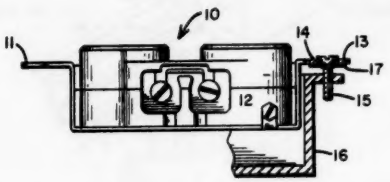
A cable termination is disclosed by which to connect and disconnect a suspension cable to and from a submersible electrical apparatus. The structure is arranged for high reliability in the mechanical and electrical phase of the connection and in the exclusion of water from the interior of the connectors.

3,786,398
TERMINAL CONSTRUCTION
Harold F. Snider, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio
Filed May 5, 1972, Ser. No. 250,737
Int. Cl. H01r *9/08*
U.S. Cl. 339—95 R 8 Claims



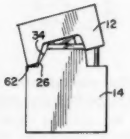
A terminal clamp for effecting an electrical connection with a conductor is disclosed. The terminal clamp includes first and second planar clamping surfaces for receiving a cylindrical wire conductor therebetween with the first clamping surface being defined by the head portion of a screw threaded into the second clamping surface. The second clamping surface is provided with a V-shaped slot which extends in the axial direction of the conductor clamped between these surfaces and which is dimensioned so that substantial portions of the conductor are coined into the slot when clamping pressure is applied to the conductor to more effectively retain the conductor at the terminal.

3,786,399
AUTOMATIC GROUNDING CONNECTION FOR ELECTRICAL UNIT
Earl E. McHattie, 2129 Midlothian Rd., Roseville, Minn.
Filed Aug. 18, 1971, Ser. No. 172,728
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 4 Claims



The mounting screw for an electrical unit, such as a wall receptacle, is threaded through an electrically conductive tab and into the metal flush box so that as the screw is tightened, the tab is drawn toward the metal mounting strap or yoke to make an electrical conduction path between the screw and the mounting strap. In one embodiment, the screw is undercut so that when secured the tab is locked in place and cannot be unthreaded.

3,786,400
ROLL-APART TERMINAL BLOCK ASSEMBLY
Hans Ege, Des Plaines, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.
Filed Oct. 7, 1971, Ser. No. 187,375
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 P 8 Claims

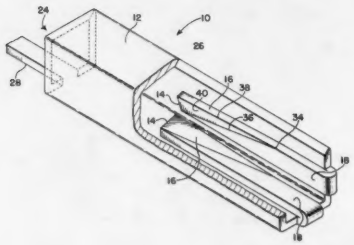


A terminal block assembly wherein the electrical connection is broken, and the blocks are separated, by pivoting or rolling one block apart from the other. The terminal block assembly includes first and second terminal blocks, each block having one side adapted to engage and mate with one side on the other block. One edge on one block defines a roll axis. An opposing surface on the other (usually mounted) block defines a fulcrum. The fulcrum surface engages the roll axis when the one block is rolled or pivoted apart from the other block to pivot its mating side away from electrical connection with the other block.

3,786,401
CONTACT SOCKET
Chesley Jones, Westlake Village, and Ougljesa Jules Poupitch, La Jolla, both of Calif., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 15, 1971, Ser. No. 189,672
Int. Cl. H01r *9/12*
U.S. Cl. 339—258 R 8 Claims

An integral electrical contact socket having a sleeve and a plurality of spring arms folded back within the bore of the sleeve and extending longitudinally thereof which enables the

contact socket to aggressively impinge an associated contact pin upon its insertion in the socket. The contact arm may be



twisted substantially about its longitudinal axis which will provide firm line contact with an associated pin.

3,786,402

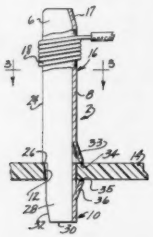
ELECTRICAL TERMINAL

Stanley V. Horecky, Oak Park, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 26, 1972, Ser. No. 300,974

Int. Cl. H01r 9/14

U.S. Cl. 339—276 A **4 Claims**



An electrical terminal comprises a U-shaped sheet metal body with the legs of the body being cut away to define shoulders for abutting the top surface of a printed circuit board. The bight of the U-shaped body also has an outwardly struck projection that engages the top surface of the printed circuit board to enhance stability of the terminal thereon. Below the detent the bight has a spring tongue for snap-locking against the bottom or printed wire side of the board. The trailing end of the body has a tapered free end and can be used as a wire wrapped terminal or may be inserted into a connector.

3,786,403

UNDERWATER ACOUSTICAL DETECTION SYSTEM

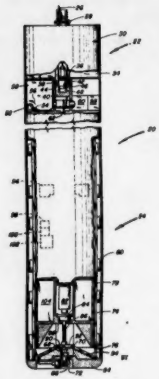
Albert S. Will, Bethesda; Sylvan Wolf, College Park, and William L. Barnum, Takoma Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 10, 1968, Ser. No. 729,143

Int. Cl. G01h 9/00

U.S. Cl. 340—2 **10 Claims**

An air-launched multiple deployment depth sonobuoy having mechanical apparatus and electrical circuitry for intermittently lowering the sonobuoy to a plurality of predetermined depths. The mechanical apparatus includes a cable wrapped around a free wheeling roller which may be braked by a motor-driven, spring-loaded clutch while a second roller urges the cable against the free wheeling roller by means of a second spring-loaded clutch driven by the motor of the first clutch. The electrical circuitry includes a plurality of switch banks responsive to rotation of a motor shaft, a plurality of hydrostatic pressure responsive switches, a plurality of limit



switches, and a plurality of relays. Time delay circuits including electrically energizable explosive squibs are also included to provide appropriate separation functions.

3,786,404

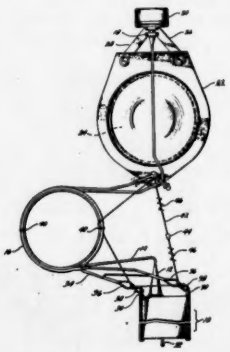
DEEP OCEAN TRANSPONDER

James O. Ewing, Granada Hills, and Philip E. Reilly, Woodland Hills, both of Calif., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Aug. 14, 1972, Ser. No. 280,296

Int. Cl. G01s 9/66

U.S. Cl. 340—2 **5 Claims**

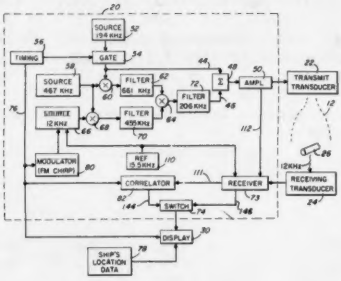


A lightweight underwater transducer is described in which the anchor contains a battery pack and a receiver-transmitter which are connected through an electrical cable to an upwardly directed transducer carried on a flotation housing. The flotation is supplied by means of a single thin-walled glass ball whose diameter is typically about 16 inches, but which may be larger or smaller. The flotation housing consists of a pair of flanged hemispheres which capture and protect the glass ball and to which is attached a tethering rope of a desired length to prevent buoyant load from being applied to the electrical cable. During handling and deployment, most of the length of the rope and electrical cable are taken up in a coil which is, in part, secured by a corrodible magnesium link and which is released in the sea by the breaking of the corrodible link.

3,786,405
SYSTEM FOR LOW-FREQUENCY TRANSMISSION OF RADIANT ENERGY

Mark A. Chramiec, Newport, R.I., and William L. Konrad, Niantic, Conn., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 111,218, Feb. 1, 1971, abandoned. This application Nov. 8, 1972, Ser. No. 304,884
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **26 Claims**

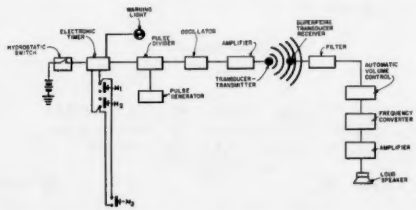


A communication system utilizing a highly directive low-frequency transmission of radiant energy which is generated by directing a beam of radiant energy at a first high frequency and at a second high frequency into a nonlinear transmission medium. By virtue of an interaction in the nonlinear medium between the energies at the first and the second high frequencies, a low frequency beam of radiation is produced having a directivity pattern comparable to that of the energy radiated at the high frequencies. The system is particularly useful for sonic examination of the seabed for sub-oceanic strata and buried objects such as pipes, in which case a receiving hydrophone and display are utilized to plot a graphical display of echoes reflected from the strata.

3,786,406
AUTOMATIC DEVICE FOR SIGNALING FROGMAN ACCIDENTS

Ettore Bianco, Via Triulziana, 52, San Donato Milanese, Italy

Filed Sept. 3, 1971, Ser. No. 177,760
Claims priority, application Italy, Sept. 3, 1970, 29296/70
Int. Cl. H04b *1/00*
U.S. Cl. 340—5 R **1 Claim**

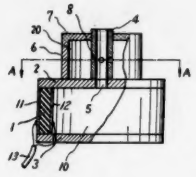


A novel system for detecting frogman accidents is disclosed. The system comprises an electronic sending system which emits an regualar acoustical signal, provided that the submerged frogman periodicaly actuates a lever and a receiving system which receives the acoustical signal and transforms it electronically to an audial signal. If the frogman fails to periodically actuate the lever, then the transmitter automatically sets off an alarm.

3,786,407
ACOUSTIC TRANSDUCER FOR DEEP SEA

Heisuke Ogawa, Kobe; Mitsuo Yamamoto, Akashi; Seiisaku Bando, Kobe, and Osami Baba, Osaka, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Furuno Electric Company Limited, Nagasaki-ken, Japan

Filed Mar. 29, 1972, Ser. No. 239,102
Claims priority, application Japan, Apr. 14, 1971, 46/23107
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 **2 Claims**

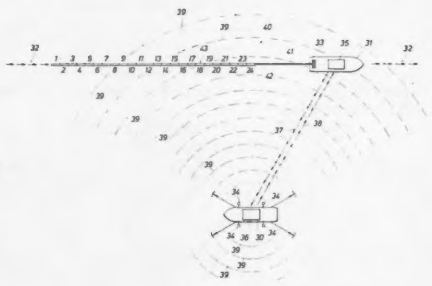


An acoustic transducer which includes a piezo-electric ceramic element, one surface of which is exposed while the other surface is enclosed by a housing to form a static water pressure chamber, an opening in said enclosure and a resonant mechanical filter coupled to said opening.

3,786,408
METHOD AND APPARATUS FOR OFFSHORE GEOPHYSICAL EXPLORATION WITH LOW POWER SEISMIC SOURCE

William David Jenkinson, and Paul Anthony Bryant Marke, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,880
Int. Cl. G01v *1/00, 1/24*
U.S. Cl. 340—15.5 MC **14 Claims**



This invention relates to novel methods and apparatus for making offshore geophysical surveys with a low power seismic source. A first vessel, which is provided with air guns or the like, is anchored at a predetermined location, while a second vessel tows a streamer cable along a preselected course past the first vessel. The second vessel transmits command signals to cause the air guns on the first vessel to be fired at appropriate intervals, whereby a sequence of seismic pulses is refracted along a common path on the course, and whereby each of these pulses is detected by succeeding receiver stations of the cable. All of the pulses detected at a common surface point are gathered for each of the various common surface points along the course, and are then stacked to provide a

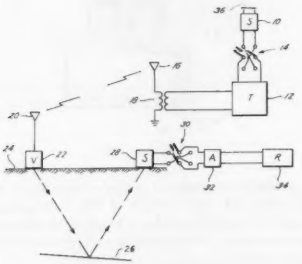
single pulse of greatly improved signal-to-noise ratio for each common surface point. The stacked signals may then be arranged to provide a refraction profile of the course, in order to define traps and the like in subterranean earth formations.

3,786,409

SWEEP SIGNAL SEISMIC EXPLORATION

Sam A. Sorkin, Houston, Tex., assignor to Teledyne Exploration Company, Houston, Tex.

Filed Aug. 7, 1972, Ser. No. 278,297
Int. Cl. G01v *1/14, 1/22*
U.S. Cl. 340—15.5 CC **13 Claims**



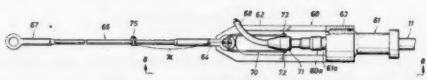
A series of sweep signals is generated at one or more locations and transmitted into the earth. The reflected signals from subsurface earth formations are composited and a correlogram produced by cross-correlation with the transmitted signal. To reduce the correlogram tail produced by harmonic distortion in the received signals, a series of sweeps, preferably even numbered, is recorded, alternate sweeps being recorded in the normal manner and the other sweeps being recorded using reversed polarity of the sweeps and reversed polarity of the seismometer input to the seismic amplifier, while maintaining the same signal amplitude during all sweeps, and then compositing and cross-correlating in the usual manner.

3,786,410

SEISMIC CABLE ASSEMBLY

Gerald D. Hazelhurst, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Dec. 27, 1971, Ser. No. 212,267
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **4 Claims**



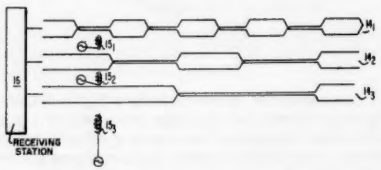
The seismic cable assembly disclosed is made up of a plurality of lengths of cable with each link having a plurality of electrical conductors and a tensile member extending throughout its length. The lengths of cable are strung end to end and the adjacent ends of each of the lengths are connected together by connectors that connect the tensile members of adjacent cable lengths. In this way, the entire cable assembly can be moved from position to position by dragging the assembly along the ground with the load imposed on the cable by the friction between the ground, and the cable being transmitted to the towing vehicle through the tensile members. The cable assembly is connected to the towing vehicle by a connector assembly that includes a shear pin designed to fail when the force required to move the cable assembly reaches a predetermiend amount. This protects the cable from damage should it hang up as it is being dragged along the ground. The geophones and the connectors between the lengths of cable are enclosed in housings to provide smooth surfaces for sliding across the ground, and in the case of the geophones, to add weight to the geophone to improve its contact with the ground.

3,786,411

DEVICE FOR DETECTING LOCATION OF A MOVABLE BODY

Noritaka Kurauchi; Susumu Hiraoka; Kenichi Yoshida, and Masaki Ohmori, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 26, 1971, Ser. No. 202,337
Claims priority, application Japan, Nov. 26, 1970, 45/104586
Int. Cl. G08g *1/12*
U.S. Cl. 340—23 **5 Claims**



A device for detecting the location of a moving body comprising an antenna or antennae provided on the moving body. A fundamental and a plurality of other conductor pairs extend in parallel along the path of the moving body. Each of the conductor pairs includes portions in which the coupling between the conductor pair and the antenna is changed periodically. The changing period of any one of the other conductor pairs is selected as an integer fraction of the changing period of the fundamental conductor pair, so that any region along the length of the path is coded in accordance with a binary code. A ground station is coupled with all of the conductor pairs, whereby the location of the moving body in whatever coded region can be detected from the ground station or the moving body when an electric signal is transmitted from the antenna, or when one or a plurality of signals are supplied from the ground station to the conductor pairs.

3,786,412

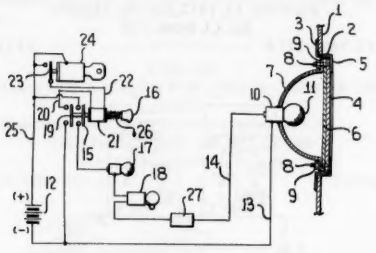
PARKING INDICATORS FOR AUTOMOBILES

John J. Capriotti, 632 Snug Harbor Dr., Boynton Beach, Fla.

Filed Jan. 10, 1972, Ser. No. 216,407
Int. Cl. B60q *1/48*
U.S. Cl. 340—54 **4 Claims**

A safety parking signalling device for automobiles to enable the driver to advise drivers of vehicles to his rear of his intention to park. The device comprises a light compartment mounted at the rear of the vehicle and covered at its rear by a translucent sheet bearing "parking" indicia. The circuit to the lamps is controlled by a manual "on-off" switch mounted conveniently to the driver. A "flasher" unit and also preferably visible and/or audible indicating means, such as a lamp and/or buzzer respectively, are connected in series in the circuit to the lamps. Actuation of said switch to "on" position also energizes a separate second circuit having means therein to hold

said lamp switch in on position until a switch in said second holding circuit is opened by performance of some operation,



such as turning of the ignition, normally effected on completion of a parking maneuver.

3,786,413

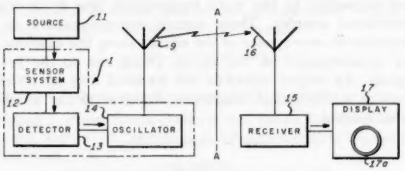
VEHICLE TIRE CONDITION MONITOR SYSTEM

Hugh B. Matthews, Acton; Gerald F. Ross, Lexington, and Kenneth W. Robbins, Wilmington, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,608

Int. Cl. B60c *23/02*

U.S. Cl. 340—58 **19 Claims**



The condition monitor provides information as to the state of a monitored dual state device having, for example, possible satisfactory and unsatisfactory conditions. Use is made of a passive radio transducer element powered within a moving device by a resonant mechanical system excited primarily by cyclic accelerations. In the unsatisfactory condition of the monitored device, the passive transducer emits a characteristic signal which is detected at a stationary station for the operation of a suitable alarm or remedial control. In the normal or satisfactory condition of the monitored device, the passive transducer is dormant.

3,786,414

FAIL SAFE CONTROL CIRCUIT FOR TRAFFIC LIGHTS

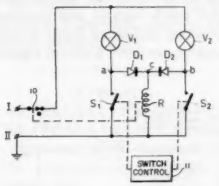
Jean Dressayre, Orsay-Essones, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 776,467, Nov. 18, 1968, abandoned. This application Mar. 19, 1971, Ser. No. 126,338

Int. Cl. G08g *1/097*

U.S. Cl. 340—78 **9 Claims**

A circuit for preventing the simultaneous energization of first and second signal lamps includes first and second relay contacts connected in series with said first and second lamps respectively, across a source of voltage. A pair of diodes are connected in series opposition between the common junction points of the lamps and contacts. A high-ohmic relay coil is



connected between the junction of the diodes and one terminal of the voltage source.

3,786,415

DATA TERMINALS

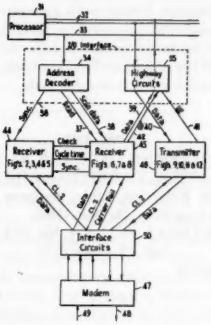
Brian Harry Phillips, Crick, and Robert Gary Young, Kenilworth, both of England, assignors to The General Electric Company, London, England

Filed Nov. 14, 1972, Ser. No. 306,314

Claims priority, application Great Britain, Nov. 17, 1973, 53380/71

Int. Cl. H04l *7/00*

U.S. Cl. 340—146.1 D **12 Claims**



A data terminal for a digital signalling system is arranged to receive incoming data transmitted in serial form and to divide the data into multi-digit signal units for supplying to a processor. Receipt of the data is controlled by a timing generator having a cycle of time slots equal to the number of digits in a signal unit. The validity of each signal unit is checked, using check bits forming part of each unit, and a check fail indication is passed to the processor if an invalid unit is detected. If the processor receives a succession of check fail indications, it initiates resynchronisation of the terminal, by resetting the timing generator. For this purpose, the terminal has a pattern recognition circuit for extracting an indication of synchronisation from the incoming data.

3,786,416

OPTICAL CHARACTER IDENTIFICATION

Chetan Vijaysinh Bhimani, Arlington, Va., assignor to Recognition Equipment, Incorporated, Irving, Tex.

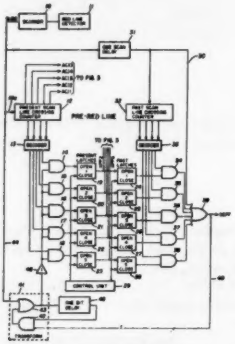
Filed Sept. 28, 1971, Ser. No. 184,537

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 AC **11 Claims**

Printed characters, superimposed upon a contrasting center bar extending through a character field, are identified by scanning each character along a plurality of vertically aligned,

laterally spaced paths to generate character signals dependent upon encountering character portions. An output signal is produced in response to the character signals and control signals. In a preferred mode for alphanumeric characters, white signals and black signals are generated, which are representative of white and black fields at each of a plurality of points along each scan path. Control signals are generated



in response to a scan encountering the center bar. The character portions on either side of the center bar are scanned separately and different techniques are used to analyze the character information obtained to generate enclosed point signals and nonenclosed point signals. In both data processing techniques the enclosed point signals for a plurality of separate zones of the character field are compared with a code to produce character identification signals.

3,786,417

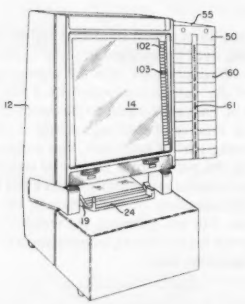
SCHEME FOR MAPPING MECHANICAL TRANSLATION TO A RELATIVELY ARBITRARY INDEX TABLE

Carl O. Carlson, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 8, 1972, Ser. No. 251,122

Int. Cl. G06k *7/10*

U.S. Cl. 340—147 R **23 Claims**



Apparatus for registering or indexing in sequential manner the position of microimages onto a table of human readable information, wherein optical fibers carry light from a masked source to an index board for rapidly obtaining the desired information. The source of light is coupled to the microimage carrier in an arrangement wherein movement of the carrier positions the light source to pick up desired points or locations and thereby project the light through the optical fibers to the index board to indicate relative positions of the microimages.

3,786,418

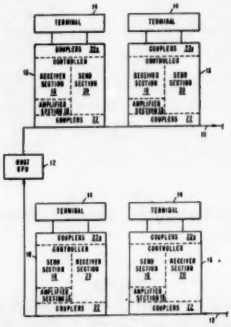
MULTI-TERMINAL DIGITAL SIGNAL COMMUNICATION APPARATUS

Howard H. Nick, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,894

Int. Cl. H04b *1/58*

U.S. Cl. 340—147 R **11 Claims**



A multi-terminal digital signal communication apparatus is provided which includes a continuous medium for conveying signals such as a transmission line. At least one signal sending section is provided for generating and propagating signals along the medium. A first directional coupler is provided associated with the transmission line for obtaining branch signals without interrupting the conveyance of the signals along the transmission line. The branch signals are amplified and recoupled to the main transmission line by a second directional coupler. These signals are propagated in the direction of conveyance of the signals along the medium and are superimposed on the signals giving rise to the branch signals. An output signal to the terminal may be obtained through a directional coupler in response to the amplified branch signal.

3,786,419

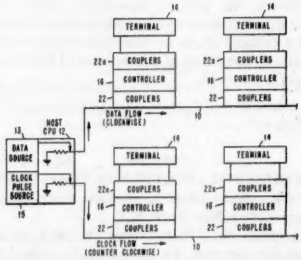
SYNCHRONIZING CLOCK SYSTEM FOR A MULTI-TERMINAL COMMUNICATION APPARATUS

Howard H. Nick, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,916

Int. Cl. H04l *15/00;* **H04q** *5/06*

U.S. Cl. 340—147 SY **9 Claims**



A synchronizing clock system is provided for a multi-terminal communication apparatus having coupling connecting devices and having at least one source of information signals. The information signals are propagated along a transmission medium in one direction. The information signals on the main

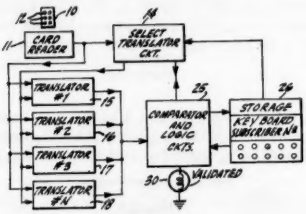
transmission medium are coupled from and to the transmission medium. Clock signals are provided which propagate along the transmission medium in the opposite direction to the information signals. These clock signals are coupled from the transmission medium to provide the synchronization for the system.

3,786,420

VALIDATION SYSTEMS FOR CREDIT CARD OR THE LIKE

Leon Stambler, 534 Longacre Ave., Woodmere, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,146
Int. Cl. G06k *9/00*; **H04q** *9/00*
U.S. Cl. 340—149 A **10 Claims**



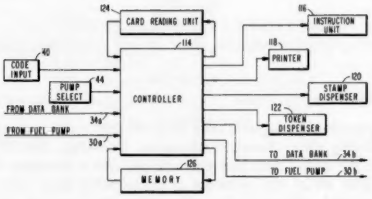
A credit card validation system employs apparatus which serves to decode validation information contained on the card by means selecting one of a plurality of translators selected at different intervals according to a predetermined format data also contained on the credit card. This uniquely translated information is compared with a secret subscriber number, memorized by the credit card holder, and obtained by him in complete privacy when his account is opened.

3,786,421

AUTOMATED DISPENSING SYSTEM

Wolfgang J. Wostl, South Holland, and Bobby G. Gower, Park Forest, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed May 25, 1972, Ser. No. 256,748
Int. Cl. G06k *7/08*
U.S. Cl. 340—149 A **18 Claims**



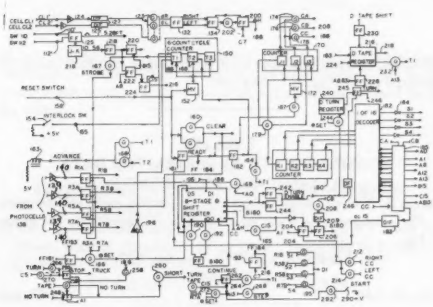
An automated article dispensing system, such as a vehicle service station, capable of dispensing goods in response to activation by an authorized holder of a credit card, and not requiring an attendant. The customer inserts the credit card into a control console and the identifying indicia from the credit card are checked to ensure they correspond to a valid credit account. If so, the control console is enabled to permit the customer to select the goods desired. If desired, the system can also require the customer to insert a personal identification code which is checked to verify that the customer is an authorized user of the credit account. The sale price and quantity are applied by the control console to a data bank for billing and inventory. If the credit account is invalid, the credit card is captured by the control console. If the credit account is questionable, the credit card is returned without enabling the selection of goods. Means are included for ensuring that the customer does not forget to pick up his credit card and receipt. Means are also included to provide premiums such as trading stamps and premium tokens.

3,786,422

SYSTEM FOR DETERMINATION OF DEVIATIONS OF A VEHICLE FROM A PRESCRIBED ROUTE

Samuel Lubkin, deceased, late of Lauderdale Lake, Fla. (by Frances Lubkin, administratrix), assignor to Rel-Reeves Inc., Boynton Beach, Fla.

Filed Jan. 31, 1973, Ser. No. 328,930
Int. Cl. B60r *25/00*
U.S. Cl. 340—149 R **10 Claims**



A system for determining deviations of a vehicle from a prescribed route on a tape advanced in steps through scanning means in a tape reader to generate first data signals representing prescribed turning points in the route. A heading means has associated photoelectric means to generate second data signals representing angular changes in heading of the vehicle and a odometer has associated switch means for generating third data signals representing distances travelled between turns and around turns. Digital logic circuitry receptive to the first, second and third data signals includes digital counting, register and decoding means for comparing the second and third data signals with the first data signals and for generating signals indicative of coincidence and noncoincidence of the compared signals.

3,786,423

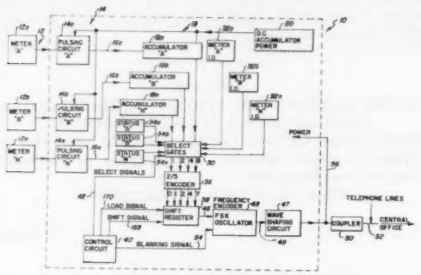
APPARATUS FOR CUMULATIVELY STORING AND REMOTELY READING A METER

Dennis J. Martell, West Chicago, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Jan. 24, 1972, Ser. No. 220,015
Int. Cl. G08c *19/16*
U.S. Cl. 340—151 **15 Claims**

There is disclosed a method and an apparatus for remotely reading one or more meters containing information which are located in a station remote from a central location. The apparatus comprises a means for producing a plurality of information signals indicative of the information being registered on the meter; a means for accumulating the information signals; a means for interrogating the accumulator means wherein a plurality of individual output data bits, each of which are representative of one of the digits of information registered on the meter, are provided; a means for converting these output data bits to a frequency coded signal wherein the frequency coded signal is representative of the magnitude of

each of the output data bits; and a means for sequentially transmitting the frequency coded signals to the central office



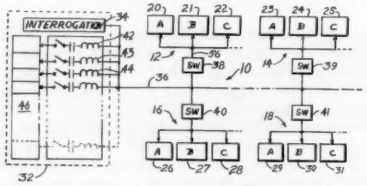
location, thereby enabling each of the digits of information registered on the meter to be read.

3,786,424

COMMUNICATIONS SYSTEM FOR DATA TRANSMISSION AND RETRIEVAL

David S. McVoy, and Richard G. Reynolds, both of Sarasota, Fla., assignors to Coaxial Scientific Corporation, Sarasota, Fla.

Filed Feb. 22, 1972, Ser. No. 227,752
Int. Cl. H04h 9/00
U.S. Cl. 340—151 **14 Claims**



A communications system, such as a cable television system, embodies an arrangement for data transmission which utilizes a combination of time and frequency division. Groups of data transmitters are connected to data retrieval circuitry through switch circuits which are selectively addressed by a predetermined code to provide communication between all of the data transmitters of the group and data retrieval circuitry. The transmission of data from transmitters in the other groups are blocked until the appropriate address code is sent to the associated switch circuit. Circuitry utilizing a synchronous or non-synchronous clock is provided for generating a message marker along with the data pulse train.

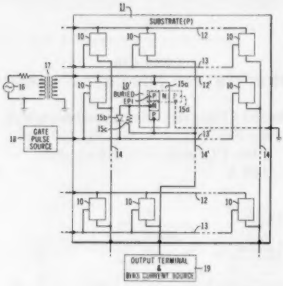
3,786,425

INTEGRATED CIRCUIT SWITCHING NETWORK PROVIDING CROSSPOINT GAIN

Irvine Keers Hetherington, St. Charles, Ill.; Robert Leonard Pritchett, Bath, Pa., and Robert Kenneth York, Naperville, Ill., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1972, Ser. No. 316,284
Int. Cl. H011 11/00
U.S. Cl. 340—166 R **12 Claims**

An integrated circuit thyristor switching network in which a parasitic pnp transistor effect, normally encountered as a result of the junction isolation employed, provides a crosspoint gain rather than the loss previously presented by the thyristor. When a thyristor crosspoint is switched to its on



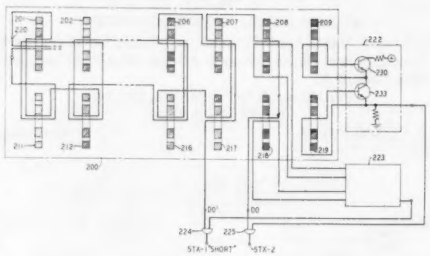
state, the effective pnp transistor is biased to its active region and draws current from the negatively biased substrate to augment the signals being applied to a selected network path.

3,786,426

DATA CHARACTER DECODER WITH PROVISION FOR DECODING BEFORE ALL CHARACTER ELEMENTS ARE RECEIVED

Scott McDowell Fitch, Holmdel; Alfonso Vincent Gallina; Otto Frederick Gerkensmeier, both of Freehold, and Peter Stephen Warwick, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 641,954, May 29, 1967,. This application Aug. 24, 1970, Ser. No. 66,623
Int. Cl. G06f 7/00; G11c 5/12, 19/00
U.S. Cl. 340—172.5 **2 Claims**



A transfluxor magnetic core dual rail shift register arranged for storing data character elements. Decoding circuits examine the stored data elements and provide a decoding function after all of the elements of a character have been accepted and, alternatively, after most but not all of the character elements have been received.

3,786,427

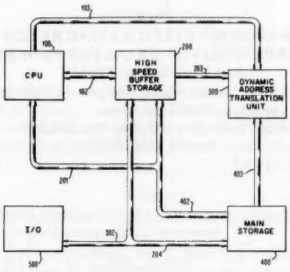
DYNAMIC ADDRESS TRANSLATION REVERSED

George E. Schmidt, and Joseph F. Schnell, both of Lake Katrine, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,912
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 **2 Claims**

In a virtual storage system, virtual storage may be divided into segments with each segment being divided into pages and each page containing a predetermined number of bytes. A storage control system is provided including a main storage

unit, a high speed buffer storage unit operating in a virtual address mode and a dynamic address translation unit for controlling virtual page address to real page address translation including an associative storage for storing a plurality of virtual page addresses and associated real page addresses. A processing unit when making a storage request to the storage control system provides a virtual address which includes a virtual page portion containing a segment and page field and a byte portion. An I/O channel when making a storage request to the storage control system provides a real address which includes a real page portion and a byte portion. The high-speed buffer contains an address storage portion for storing virtual page addresses and a corresponding data storage portion for storing blocks of data. When a processing unit makes a request to the storage control system, the virtual page portion of the virtual address is compared with the virtual page portions stored in the buffer to determine whether the buffer may be utilized for data transmission with the processing unit. When an I/O channel makes a storage request to the storage



control system the real page address is compared with the real page addresses stored in the translation unit and when a comparison is achieved a virtual page address corresponding to the real page address is provided to the buffer for further determination as to whether the buffer may be utilized for data transmission with the I/O channel. The storage control system also includes logic for controlling the transfer of address and data information between the processing unit, the I/O channel, the high-speed buffer unit and the main storage unit.

3,786,428

PATTERN CLASSIFICATION EQUIPMENT

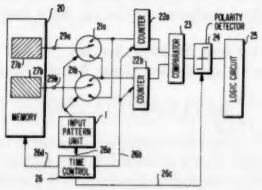
Kousuke Takahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,693

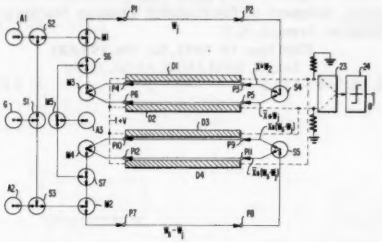
Claims priority, application Japan, June 2, 1971, 46-38802

Int. Cl. G06k *9/10*

U.S. Cl. 340—172.5 **12 Claims**



A pattern classification system responds to an n-dimensional binary pattern and classifies the pattern in accordance with previously stored weighting coefficients. The n-dimensional pattern is multiplied by positive and negative weighting coefficients to form a sum which is a measure of the similarity



of the pattern to a known pattern for which the weighting coefficients are selected. Magnetic domain storage and logic circuits are used to store the weighting coefficients and form the sum.

3,786,429

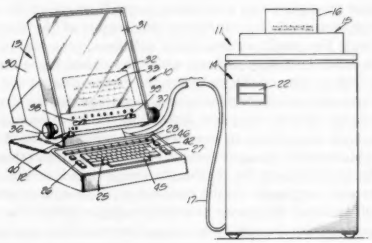
ELECTRONIC TEXT DISPLAY SYSTEM WHICH SIMULATES A TYPEWRITER

Arnold J. Goldman, Encino; Stephen L. Kurtin, and Carver A. Mead, both of Pasadena, all of Calif., assignors to Lexitron Corporation, Burbank, Calif.

Filed July 12, 1971, Ser. No. 161,554

Int. Cl. G06f *3/10, 3/14*

U.S. Cl. 340—172.5 **5 Claims**



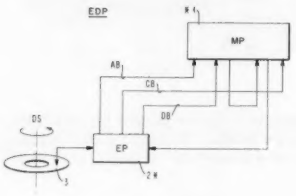
There is disclosed herein an electronic typewriter system including an operator station and desk-side console. The operator station includes a keyboard and a visual display for typed text, and the console includes suitable control and memory means and a print-out device. The system enables textual material to be entered via the keyboard and to be displayed in a full page format on the display, as well as to be stored in a memory. The system provides editing capabilities for changing, editing and manipulating the text, and a hard copy of the displayed text can be typed out by a printer upon command. The keyboard and display are constructed and organized to simulate the operational features of a conventional electric typewriter. Special equipment includes simulated platen knobs, margin indicators, space and back space keys, and a vertical spacing lever similar in use to those found on conventional electric typewriters, along with electronic subsystems acting in cooperation therewith to enable display of a page outline, page movement on the display, setting of margins for the typed text, controlled movement of a position indicator or cursor, and so forth.

3,786,430

DATA PROCESSING SYSTEM INCLUDING A SMALL AUXILIARY PROCESSOR FOR OVERCOMING THE EFFECTS OF FAULTY HARDWARE

Johann Hajdu; Guenter Knauft, both of Boeblingen; Petar Skuin, Magstadt, and Edwin Vogt, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,881
Int. Cl. G06f *15/16, 15/20, 11/06*
U.S. Cl. 340—172.5 **2 Claims**



An electronic data processing system comprising a relatively large main processor, a relatively small auxiliary processor, and a bus system linking both of said processors. The auxiliary processor is linked, via the bus system, to various portions of the main processor including data registers, error checking circuits, and function decoders. If one of the error checking circuits within the main processor detects a machine malfunction, the auxiliary processor will be able, via the bus system, to determine the portion of the main processor in which the malfunction occurred (by examining the output of the function tected the malfunction), and to determine the function which the main processor was attempting to perform when the malfunction occurred (by examining the output of the function decoder). The auxiliary processor will then, also via the bus system, address a data register which furnished input data to the failing portion of the main processor and extract the data therefrom; the auxiliary processor will manipulate the data (in accordance with the function defined by the function decoder in the main processor) to produce the result that would have been produced if the malfunction had not occurred (thereby, in effect, simulating the malfunctioning portion of the main processor); and, again via the bus system, the auxiliary processor will transmit the result to a data register within the main processor which accepts output data from said failing portion. The main processor will then be restarted to continue processing.

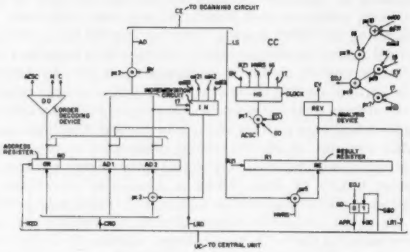
3,786,431

ELECTRONIC SCANNER CHECKING PROCESS AND SYSTEM

Claude Bouchet, La Verenne-St.-Hilarie, and Vittorio Ziliotto, Versailles, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,098
Claims priority, application France, Mar. 5, 1971, 71.7696
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **5 Claims**

An electronic scanner is started by a central processor to asynchronously scan a number of lines. When the scanner detects a calling line, it stops and calls the processor. The processor then starts the scanner again to operate till it detects another calling line or reaches the last line to be scanned. It is possible with such a system that the scanner will not operate properly and the central processor will not be informed of this



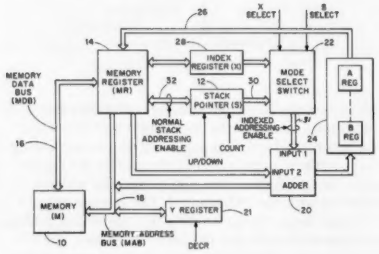
fact. The invention provides for check scanning, without event detection, but with a stop at specified addresses.

3,786,432

PUSH-POP MEMORY STACK HAVING REACH DOWN MODE AND IMPROVED MEANS FOR PROCESSING DOUBLE-WORD ITEMS

William E. Woods, Natick, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 20, 1972, Ser. No. 264,639
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **12 Claims**



A first in-last out (i.e. push-pop, push-down, or last in-first out) memory stack is implemented with means for reaching down into the stack without pushing or popping thereby allowing access to information which would not otherwise be immediately available. The stack also features improved processing of double-word items by use of unique double push and double pop algorithms.

3,786,433

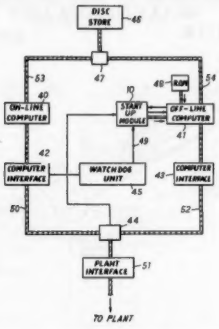
COMPUTER CONTROL ARRANGEMENTS

John Percy William Notley, and James Simon Noble, both of Luton, England, assignors to George Kent Limited, Luton, England

Filed Sept. 25, 1972, Ser. No. 291,527
Claims priority, application Great Britain, Sept. 29, 1971, 45430/71
Int. Cl. G06f *15/16, 15/46*
U.S. Cl. 340—172.5 **12 Claims**

An electrical circuit for causing a computer to begin operating in accordance with a predetermined program. The circuit comprises a sequence signal generator and a store for a start address of the program. When an input signal is applied to the circuit, the sequence signal generator provides three output signals, a first signal for stopping the computer in the event that it is already operating in accordance with another program, a second signal for causing a start address of the

predetermined program to be loaded into a memory address register of the computer, and a third signal for re-starting the computer. The circuit can be used in a dual computer system wherein malfunction of a normally on-line computer causes



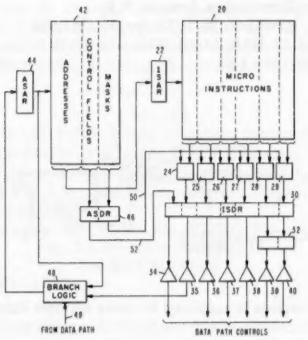
generation of an input signal for triggering the sequence signal generator to bring a normally off-line computer into operation. Alternatively, the circuit can be used for controlling a system having a single computer from a remote location.

3,786,434

FULL CAPACITY SMALL SIZE MICROPROGRAMMED CONTROL UNIT

Harold E. Frye, Hyde Park, and Robert F. McMahon, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,792
Int. Cl. G06f *9/16, 9/00*
U.S. Cl. 340—172.5 **8 Claims**



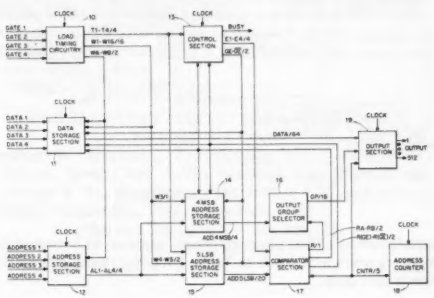
A microprogrammed control unit comprising an instruction memory for storing microinstructions with no repetitions and an address memory for storing the addresses of microinstructions which make up a microprogram. Within the instruction memory, micro-orders are densely stored. Each time that a word is accessed from the instruction storage, a mask which is stored along with the address in the address storage is utilized to select appropriate micro-orders to produce a desired microinstruction. Through the use of the mask, and associated gates, each word in the instruction storage is capable of supplying a plurality of microinstructions to the system.

3,786,435

DATA TRANSFER APPARATUS

Frederick A. Sherman, Levittown, Pa., assignor to GTE Information Systems Incorporated, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,508
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **12 Claims**



Apparatus for transferring messages received at any of four inputs to any of 512 outputs. Messages of 64 bits each may be present on any of four data input lines simultaneously. A 9-bit address identifying an output line is provided with each message on an associated address line. The 64 data bits of each message received during a 64-bit message input period are stored in a memory array. The four most significant bits (MSB) of each address are stored in one memory array and the five least significant bits (LSB) of each address are stored in another memory array. During the next 64-bit period the five LSB's of the stored addresses are compared with the count of a 5-bit (32 count) counter. When a comparison occurs, the appropriate four MSB's of the address are read out of the memory array and the 64 data bits are also read out of the memory. The four MSB's of the address are decoded to select the proper one of sixteen groups of of 32 output lines to which the data is to be directed. The 64 bits of data are received in parallel and accepted by the proper output group. Under control of the 5-bit counter, the output group converts the data from parallel to serial form and demultiplexes the serial data to direct it to the proper one of the 32 output lines of the group. The apparatus includes a second set of data and address memories so that a second set of messages can be received and stored while the information in the first set is being read out.

3,786,436

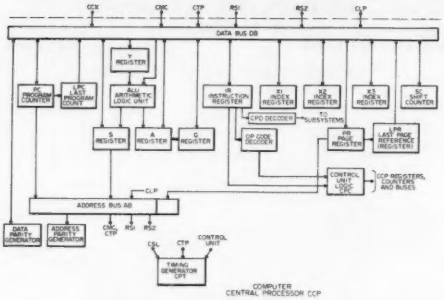
MEMORY EXPANSION ARRANGEMENT IN A CENTRAL PROCESSOR

Paul Z. Zelinski, Elmhurst, and Leo V. Jones, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Mar. 14, 1973, Ser. No. 341,226
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **12 Claims**

A page register in the central processor comprises 3N bistable devices, N each for an instruction field, a branch field, and a data field, to extend addresses by N bits beyond the capacity of the operand portion of the format of instructions. A "load page register" instruction uses the operand to designate load the branch field and/or the data field, or transfer the instruction field to the data field; and also supplies the values for loading the branch and/or data field. A "last page reference" register is also provided to which the instruction and data

fields are transferred from the page register during execution of each instruction, while the address in a program counter is



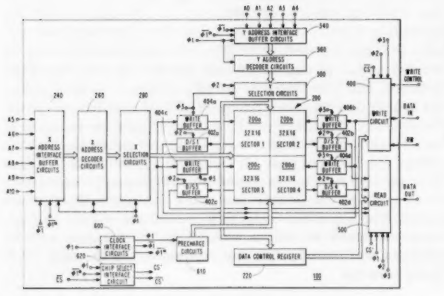
transferred to a "last program count" register, to be stored in memory when a "branch and store program" linkage instruction is executed.

3,786,437

RANDOM ACCESS MEMORY SYSTEM UTILIZING AN INVERTING CELL CONCEPT

Brian F. Croxon, Peabody, and Laurence F. Abbott, Needham, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 3, 1972, Ser. No. 215,976
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 DR **39 Claims**



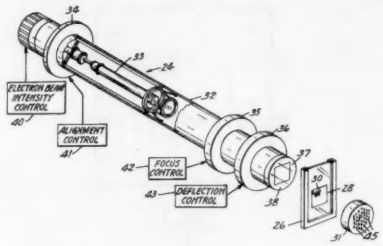
A non-destructive read MOS memory system associates a different cell of an additional group of storage cells with a different column grouping of the memory cells of a two dimensional array. Each cell of the additional group stores indications as to the number of times the cell contents of its associated column has been selected during a read or write cycle of operation. Each time a column is selected during a read cycle of operation, the contents of all of the cells of a selected column are inverted and written back into the cell automatically refreshing the column cells. To provide read out of the correct information to an utilization device a signal representative of the content of the selected cell within a column is logically combined with a signal representative of the state of its associated status cell. Similarly, to ensure that the correct data is written into a selected cell, the input data signals from the utilization device are logically combined with signals representative of the state of the status cell associated with the column.

3,786,438

OPTICAL READ-ONLY MEMORY SYSTEM INCLUDING A CATHODE RAY TUBE

James R. Packard, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 26, 1972, Ser. No. 266,299
Int. Cl. G11c *11/30, 13/04*
U.S. Cl. 340—173 R **5 Claims**



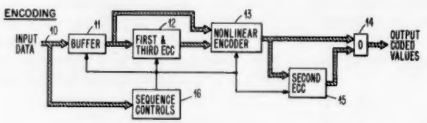
A system for optically reading in parallel a plurality of bits contained in a predetermined pattern in a data array on a planar data mask containing a plurality of data arrays. A conical beam of coherent light produced from a selected location on a planar laser material screen of a cathode ray tube is addressed to a given data array, thereby causing an image representative of said given data array to be projected onto a detector array containing a plurality of detectors in the same predetermined pattern. The planar laser material screen is positioned parallel to the planar datamask. The addressed given data array is the data array positioned within the cone of light and in an optical path including the detector array and the selected light emitting location on the screen.

3,786,439

ERROR DETECTION SYSTEMS

Earl G. McDonald, Boulder, Colo., and Arvind M. Patel, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,984
Int. Cl. H03k *13/34*; H04l *1/10*; G11b *27/36*
U.S. Cl. 340—146.1 AL **26 Claims**

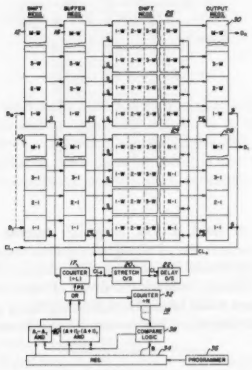


Error detection is enhanced by using multiple independent error codes combined with nonlinear changes in the data field as applied to different error codes. Such nonlinear permutations increase the probability of detecting errors thereby maximizing the utilization of check bit redundancies. In a magnetic tape subsystem, error detection and correction can be enhanced by scrambling track-to-error code relationships between a plurality of independent codes. Tracks with the highest probability of errors, i.e., the outside tracks on a ½ inch tape, for example, are connected to nonadjacent inputs of error correction code apparatus. Additionally, the input-to-track relationship of various code apparatus can be scrambled, either permanently or during a tape transducing operation. The above permutations provide best advantage with selected error correction codes and systems having identifiable probability of error patterns.

3,786,440
DIGITAL DATA STORAGE WITH EQUAL INPUT AND OUTPUT DATA RATE, BUT VARIABLE MEMORY SHIFT RATE

Gerald L. Toyen, San Diego, Calif., assignor to General Dynamics Corp., San Diego, Calif.

Filed Jan. 26, 1973, Ser. No. 326,733
Int. Cl. G11c *19/00*
U.S. Cl. 340—173 R **18 Claims**

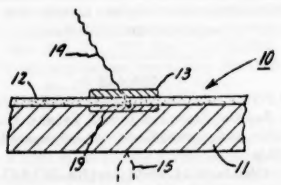


The storage capacity or length of a memory consisting of shift registers which may only be available in certain discrete bit lengths is controlled or programmed by shifting data from each stage of an input serial to parallel shift register into different ones of the memory shift registers and then transferring the data from the output stages of the memory registers into an output parallel to serial shift register. The ratio, between the number of clock pulses which shift the data into and out of the input and output registers and number of clock pulses which shift the data in the memory registers, is changed so as to alter the fan out of data from the input shift register into the memory registers. The storage capacity or length of the memory can be changed or programmed during storage operations so as to have any length up to and including the storage capacity of all of the memory registers and any additional buffer registers which may be associated therewith.

3,786,441
METHOD AND DEVICE FOR STORING INFORMATION AND PROVIDING AN ELECTRIC READOUT

William E. Engeler, Scotia, and Marvin Garfinkel, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 792,569, Jan. 21, 1969. This application Nov. 24, 1971, Ser. No. 203,110
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **5 Claims**

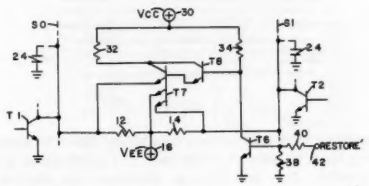


An information storing method and a storing device using a conductor-insulator-semiconductor (CIS) structure as the storage element is disclosed within. The CIS structure is initially charged to a predetermined voltage, forming a depletion region within the semiconductor beneath the conductor. Minority carriers are controllably generated within the semiconductor in proportional response to an information-bearing signal such as a specific amount of electromagnetic radiation flux. The generated minority carriers move to and are stored at the surface of the semiconductor beneath the conductor due to the electric field existing in the depletion region, thus changing the predetermined voltage. The change in voltage which may be determined is a measure of the number of generated minority carriers and, therefore, is a measure of the integrated electromagnetic radiation flux and constitutes the stored information.

3,786,442
RAPID RECOVERY CIRCUIT FOR CAPACITIVELY LOADED BIT LINES

Stephen B. Alexander, Poughkeepsie, N.Y.; Richard W. Bryant, Santa Clara, Calif.; Robert J. Lipp, Fishkill, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Feb. 24, 1972, Ser. No. 229,132
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **1 Claim**

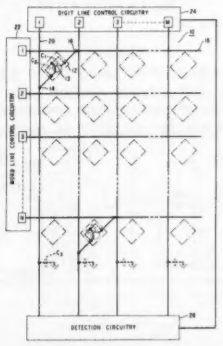


There is disclosed a circuit for achieving rapid recovery of he capacitively loaded bit lines of a semiconductor memory. Transistors are provided for driving the lines following a write cycle. The active driving of the bit lines forces them to the same potential so that a read cycle may begin very soon after the termination of a write cycle.

3,786,443
NONDESTRUCTIVE READ SEMICONDUCTOR MEMORY UTILIZING AVALANCHE BREAKDOWN

Jerry Mar, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 10, 1972, Ser. No. 270,504
Int. Cl. G11c *11/36, 11/40*
U.S. Cl. 340—173 R **9 Claims**



A semiconductor memory system contains an array of two-terminal memory cells which each comprise a single junction transistor having an uncontacted base. Bit information is written into a selected cell by applying appropriate voltage

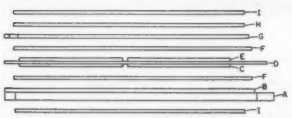
waveforms to the collector and emitter of the transistor to set the potential of the base to values which represent, respectively, either a "1" and a "0". Readout is accomplished by applying a voltage waveform containing a positive and a negative pulse to the collector of the transistor so as to first cause a change in the base potential and a corresponding change in the emitter potential, which is indicative of the information stored in the transistor cell, and then to cause the stored information to be rewritten into the cell. The readout operation is nondestructive and additionally refreshes stored information.

3,786,444

MAGNETIC THIN FILM MEMORY PACKAGING DESIGN

Larry D. Sly, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 27, 1971, Ser. No. 173,511
Int. Cl. G11c *11/14, 5/04*
U.S. Cl. 340—174 TF **1 Claim**



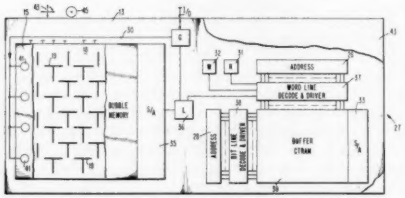
A memory store unit is made by aligning film core areas and bonding them in pairs on either side of a single piece printed wire overlay. Top and bottom insulators are aligned and tacked to a backup board. An adhesive coated top ground plane is applied to the top insulator and the glass substrates. An adhesive epoxy cover is applied to the top ground plane. The top and bottom magnetic shields are applied to the cover and backup board, and the entire package is then subjected to compression and heat to adhere the laminations together into a flat dense package.

3,786,445

INTEGRATED MAGNETIC BUBBLE AND SEMICONDUCTOR DEVICE

Irving T. Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,316
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **3 Claims**



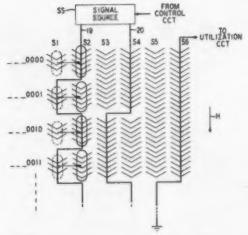
A magnetic bubble device and its associated read, write, propagation, sensing, addressing, driving, timing and control elements are combined in a unitary magnetic sheet-semiconductor structure.

3,786,446

SINGLE WALL DOMAIN CODING CIRCUIT

Peter Istvan Bonyhard, Edison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 12, 1972, Ser. No. 288,255
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **9 Claims**



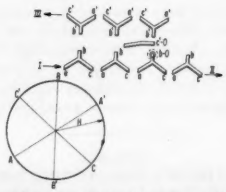
A number of field access, magnetic bubble propagation channels are connected to a single magneto-resistance detector by a binary coded interconnection circuit. The circuit is operative to retard bubbles in ones of the channels with respect to others while laterally expanding those which are not retarded. The latter provide improved signal levels.

3,786,447

INFORMATION PROPAGATION PATH SWITCHING DEVICE

Fumio Yamauchi, Tokyo-to, Japan, assignor to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Sept. 22, 1972, Ser. No. 291,514
Claims priority, application Japan, Oct. 13, 1971, 46/81120
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **3 Claims**



Magnetic domains are switched between adjacent propagation paths by varying the perpendicular magnetic field applied to a sheet of domain holding material when the domain is at a junction of two propagation paths. The propagation paths are formed by soft patterned magnetic material on the surface of the sheet. At the junction point the domain will move to one of two possible further points which are located respectively in the first and second propagation paths. The said two further points are located with respect to said junction point so that the movement of the domain to one or the other depends upon the size of the domain, which in turn is controlled by the magnetic field applied perpendicular to the sheet.

3,786,448

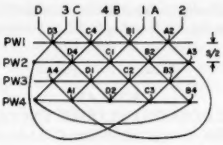
MULTIPLE ACCESS PLATED WIRE MEMORY

Kenneth E. Batcher, Stow, and John T. Franks, Jr., Tallmadge, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Sept. 11, 1972, Ser. No. 287,947
Int. Cl. G11c *11/04, 11/14*
U.S. Cl. 340—174 PW **10 Claims**

The invention relates to a novel plated wire memory arrangement which not only permits word-oriented access but

also bit-oriented access to the data storage bits thereof. The invention teaches the utilization of two separate and distinct sets of interrogation lines to achieve the multiple access characteristic. The invention is such as to be adaptable to the techniques and knowledge available in the present state of the



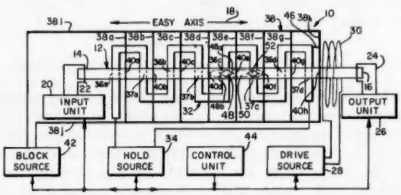
art of plated wire memories but uniquely arranges a plurality of plated wires and two separate pluralities of unplated wires so as to achieve a memory array system which is not only capable of multiple mode accessing but is also characterized by a higher bit packing density than presently taught in the art.

3,786,449

MAGNETIC THIN FILM SHIFT REGISTER HAVING BIDIRECTIONAL TRANSMISSION ELEMENTS AND OFFSET BLOCK SITES

Harvey I. Jauvtis, Arlington, Mass., assignor to Cambridge Memories, Inc., Newton, Mass.

Filed May 1, 1972, Ser. No. 249,082
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 FB **13 Claims**



A digital shift register propagating information as discrete regions of reverse magnetization has a bidirectional transmission path and has means for producing magnetic fields both continuously along the transmission path and only at selected sites along the path. Domain-blocking fields are produced at sites along the path offset uniformly from domain-holding locations by less than one-half the spacing between adjacent hold locations. In each domain-propagating step, the block fields are produced offset from the propagate fields by a time corresponding to the spatial offset.

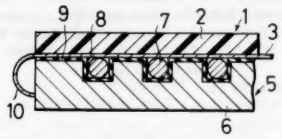
3,786,450

MAGNETIC THIN FILM PLATED WIRE MEMORY

Seihin Kobayashi; Michihiro Torii, and Takehiko Jojima, all of Shizuoka-ken, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,359
Claims priority, application Japan, Aug. 29, 1970, 45/75719
Int. Cl. G11c *11/04, 11/14*
U.S. Cl. 340—174 PW **3 Claims**

A magnetic thin film plated wire memory is provided which comprises a word plane provided with a number of parallel word wires, a digit plane having a conductive plate provided with parallel grooves and a number of digit wires each covered with a magnetic thin film and snugly disposed within said grooves with an electrical insulation therebetween, said word plane and digit plane being laminated with each other such that the word wires and digit wires face and intersect at right angles with each other, said word wires being connected at their one ends to said conductive plate, whereby when one of



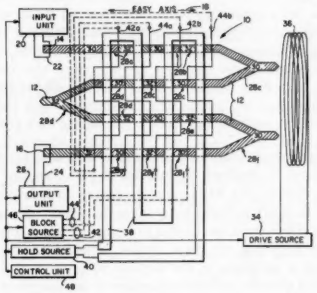
said word wires are selected, a returning electric current flowing through said conductive plate is magnetically coupled with said digit wires.

3,786,451

MAGNETIC THIN FILM SHIFT REGISTER HAVING BIDIRECTIONAL TRANSMISSION ELEMENTS AND ALTERNATELY-PAIRED BLOCK SITES

Robert J. Spain, Waban, Mass., assignor to Cambridge Memories, Inc., Newton, Mass.

Filed May 1, 1972, Ser. No. 248,813
Int. Cl. G11c *19/00*
U.S. Cl. 340—174 FB **12 Claims**



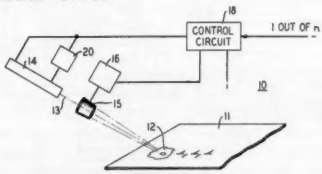
A digital shift register propagating information as discrete regions of reverse magnetization has a bidirectional transmission path and has means for producing magnetic fields both continuously along the transmission path and only at selected sites along the path. Successive locations along the path are organized into a set of first locations alternated with a set of second locations. In each shift cycle, magnetic fields first block propagation of a magnetic region along the path except from each first location to the next second location, and then block propagation except from each second location to the next first location.

3,786,452

SINGLE WALL DOMAIN GENERATOR

John Edward Geusic, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 28, 1972, Ser. No. 292,874
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **5 Claims**

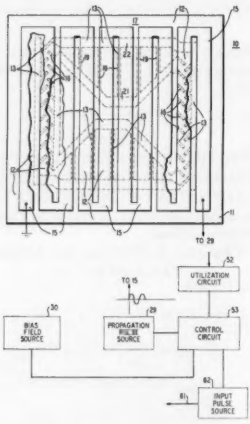


The number of magnetic bubbles generated thermally by a pulsed laser beam has been found to be a function of the diameter of the beam leading to a useful bubble generator.

3,786,453
MAGNETIC SINGLE WALL DOMAIN EXPANSION CIRCUIT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1972, Ser. No. 308,996
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **9 Claims**

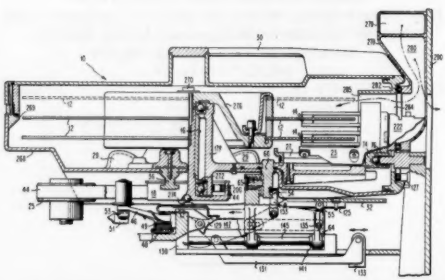


A conductor access bubble expansion and propagation arrangement is realized by interleaving the legs of a sinusoid-shaped conductor with narrow regions of relatively low moment material defined in a layer in which domains can be moved. Elongated low moment regions permit domain expansion in response to drive pulses applied to the conductor whereas a variation in the lengths of consecutive regions allows first growth and the reduction of the length of domains to a normal operating size as a domain is advanced along the axis of the sinusoid. A bubble expansion arrangement suitable for bubble detection and for a turn geometry for a closed loop bubble channel results.

3,786,454
MAGNETIC DISK STORAGE APPARATUS

Rudolf W. Lissner, and Richard B. Mulvany, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,688
Int. Cl. G11b *1/02*
U.S. Cl. 340—174.1 C **28 Claims**

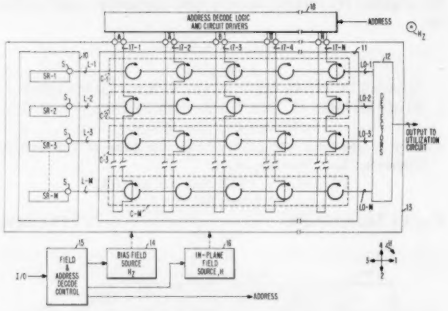


A disk storage apparatus includes an interchangeable sealed cartridge, enclosing magnetic disks, accessing magnetic head arm assemblies, a movable carriage to which the head arms are mounted, and a drive spindle on which the disks are seated. For accessing the heads to selected data tracks, coupling means are provided to engage the carriage and head arm assemblies with an external actuator, such as a linear D.C. motor or voice coil motor, disposed in a disk file housing. The file housing includes a drive motor coupled by pulley means, for example, to the enclosed spindle to provide rotary motion to the disks.

3,786,455
MAGNETIC DOMAIN DECODER/ENCODER DEVICE

Harold R. Grubb, Owego, and Lynn C. Liebschutz, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,329
Int. Cl. G11c *5/02, 11/14*
U.S. Cl. 340—174 TF **7 Claims**

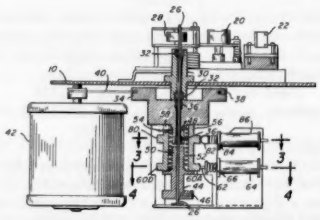


The decoder/encoder comprises plural parallel magnetic domain compressor circuits. All the idler cells of the compressor circuits are initially filled with a magnetic domain. Decode circuit drivers which include current loops associated with selected idler stages are operated to trap domains in accordance with a code pattern. A domain output is obtained from the compressor circuits having no domains trapped in idler cells while the compressor circuits having domains trapped therein do not provide a domain output to a detector circuit.

3,786,456
VARIABLE RATE INCREMENTING RECORDER

Robert L. Crafts, Tulsa, Okla., assignor to Telex Computer Products Inc., Tulsa, Okla.

Filed June 13, 1972, Ser. No. 262,242
Int. Cl. G11b *15/18*
U.S. Cl. 340—174.1 A **5 Claims**



This invention describes an improved type of incremental recording magnetic data system in which data can be recorded

in response to the arrival of specific data characters, the tape being idle in between the times of such arrivals. The equipment is similar in some respects to the U. S. Pat. No. 3,595,499, granted to Robert L. Crafts, issued July 27, 1971, entitled APPARATUS FOR MOVING TAPE INCREMENTALLY PAST A RECORDING HEAD.

This invention covers an improvement over the Crafts patent in that while it still provides the opportunity to record data incrementally, it provides an additional advantage that the rate of playback of the data can be adjusted to any desired rate from zero up to the maximum rate of traverse of the tape.

3,786,457

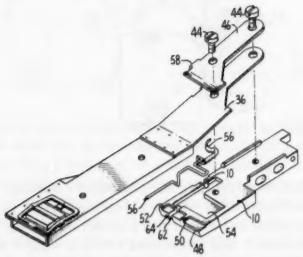
DISK RECORDER ARM ASSEMBLY MOUNT

Michael E. Kahn, Palo Alto, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 24, 1972, Ser. No. 300,276

Int. Cl. G11b *5/48*

U.S. Cl. 340—174.1 C **4 Claims**



A rigid mount for a leaf spring loaded arm assembly cantilevered from the mount, the mount has a central contact point against which a leaf spring is loaded to localize the contact interface between the mount and leaf spring and prevent undesirable resonances from developing in the arm assembly caused in part by the otherwise shifting interface between a flat mounting surface and an anticlastically curved leaf spring surface developed on bending the leaf spring when the arm assembly is loaded onto a rotating recording disk.

3,786,458

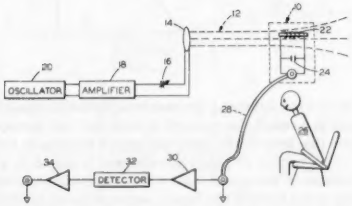
NON-CONTACTING ANGULAR POSITION DETECTOR

Joseph L. Horner, Belmont, and Gordon R. Plank, Medford, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Mar. 1, 1972, Ser. No. 230,702

Int. Cl. G08c *19/04*

U.S. Cl. 340—196 **1 Claim**



The angle between a small radio frequency coil and a spatially uniform magnetic field is measured and a signal commensurate with the measured angle is employed in a computation of angular position. The apparatus employed in the angle measurement is characterized by a DC frequency response whereby an output signal is produced in the absence of motion between the coil and field.

3,786,459

PROPORTIONAL POSITION CODER

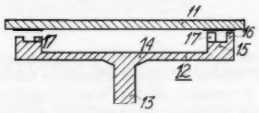
Henri Berger, Triel sur Seine, France, assignor to Societe D'Applications Generals D'Electricite et de Mecanique, Paris, France

Filed Oct. 11, 1972, Ser. No. 296,579

Claims priority, application France, Oct. 13, 1971, 7136687

Int. Cl. G08c *19/00*

U.S. Cl. 340—196 **3 Claims**



A position coder for a moving shaft generates a DC voltage having an amplitude which is proportional to the magnitude of position shift of the moving shaft of said coder with respect to a fixed point and a sign which changes whenever a shift in direction takes place. The position coder includes a disc-shaped stator with a plurality of windings equiangularly distributed along said stator and a plurality of pairs of detection coils, also angularly distributed, the first of the paired coils being at a given distance from the rotor center and the second coil of the same pair at a different distance from said center, and a rotor set up by a disc and bearing two metallic ramps, one opposite to the first windings and the other opposite to the second windings of the stator, said ramps being so arranged that the distance from ramp points to the stator varies along each ramp. The position coder may be used in servo-motors.

3,786,460

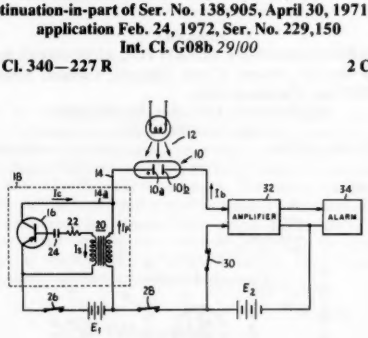
LIGHT DETECTION MONITORING DEVICE

Pierre Kaltenbach, 680 Fifth Ave., New York, N.Y.

Continuation-in-part of Ser. No. 138,905, April 30, 1971. This application Feb. 24, 1972, Ser. No. 229,150

Int. Cl. G08b *29/00*

U.S. Cl. 340—227 R **2 Claims**

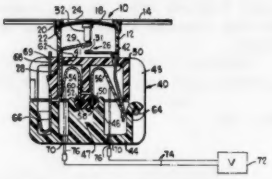


As described herein, a light detection monitoring device includes a gaseous discharge tube for converting incident light into an electric signal and a blocking oscillator. The oscillator, which is coupled to one of the electrodes of the tube and is enabled by the electric signal produced by the discharge tube, supplies short pulses which add to the discharge current to effect cumulative ionization of the gas in the tube and the attendant generation of high frequency waves. The increased discharge current and the high frequency waves are then employed to trigger local and remote alarm devices, respectively.

3,786,461
FIRE ALARM DEVICE

Will B. Jamison, Bethel Park, Pa., assignor to Consolidated Coal Company, Pittsburgh, Pa.

Filed Oct. 12, 1971, Ser. No. 188,412
Int. Cl. G08b *17/06*
U.S. Cl. 340—227.1 **8 Claims**

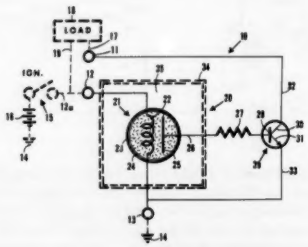


A fire alarm device including thermostat means operably connected to conductor means whereby a fire condition may activate the thermostat for providing a signal current to activate an alarm in electrical connection with the thermostat. The thermostat includes a normally open switch means having a pair of downwardly depending conducting elements extending therefrom. Each member of the pair of conducting elements is adapted to contact in electrically conducting fashion a member of a pair of current carrying conductors whereby closing of the switch due to exposure to fire may activate an alarm. In a preferred instance the conducting elements are in contact with a pair of barb-bearing electrical contacts in a hinged, channel forming receptacle. Closing of the receptacle about its hinge over a conventional electrical cord including a pair of current carrying wires forces the barbs into mechanical and electrical contact with the wires. In that fashion, the thermostat means is rapidly and efficiently operably contacted with the wires. Each hinged, channel formed receptacle includes means, such as bores, therein through which testing means, such as electrical leads to a voltmeter or the like, may be inserted for testing the connection between a fire alarm device and current carrying wires. Additionally, a fire alarm system is provided including a plurality of the foregoing fire alarm devices connected in parallel along a length of conduit and including appropriate alarm devices therefor.

3,786,462
CARBON MONOXIDE ALARM FOR AUTOMOBILES

Rodney Hayden, Stoney Creek, Ontario, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 24, 1971, Ser. No. 201,682
Int. Cl. G08b *21/00*
U.S. Cl. 340—237 R **5 Claims**

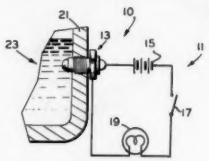


A carbon monoxide alarm device for installation in an automobile in which a vented casing contains a fuel cell having first and second electrodes in fixed space relationship within a porous body having an oxidation catalyst and is connectable by three terminals to chassis ground, the ignition circuit and to a load, the same being insertable into a mounting at a suitable location in the automobile to give a warning by actuation of the load, the latter being in the form of an electrical buzzer or lamp or both and located internally or externally of the casing.

3,786,463
FLUID LEVEL SENSOR

John R. Peltz, and Nikolaus A. Szeverenyi, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,149
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **16 Claims**

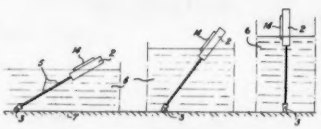


An apparatus for detecting the presence or absence of fluid at a predetermined level within a container. The apparatus comprises an electrical circuit and a sensor device electrically joined to the circuit and positioned within a wall of the container. The device comprises a housing of conductive material, a conducting member within the housing and electrically insulated therefrom, a tip member of conductive material affixed to the housing, a resistive element having first and second opposing ends, and a bimetallic member affixed respectively to the second opposing end of the resistive element and adapted for engaging the first opposing end when the temperature about the bimetallic member exceeds a predetermined level.

3,786,464
MAXIMUM LEVEL DETECTOR

Jackie Staempfli, 20, Rue du Commandant Mouchotte 75, Paris, France

Filed June 11, 1971, Ser. No. 152,110
Int. Cl. G08b *21/00*
U.S. Cl. 340—245 **3 Claims**

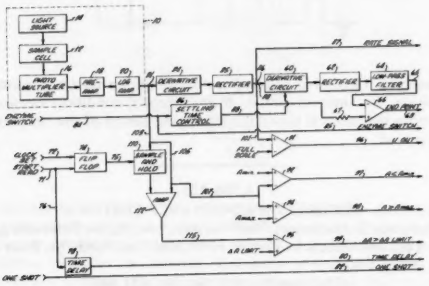


This device for detecting the maximum predetermined level of a liquid in a vessel, for example a bath tub, and warning the user when this level is attained, comprises essentially two elements, i.e., a bottom or reference element retained by gravity at the bottom of the vessel, and a float element remaining by buoyancy at the level of the liquid, and means interconnecting these two elements. These means are either telescopic or flexible, for example in the form of a nylon cord, and the float encloses a circuit comprising a source of current, a switch and a sound and/or luminous signal device. The switch is closed when the float attains the maximum preset level.

3,786,465
RATE ANALYSIS SYSTEM WITH CONSTANT RATE DETECTION CIRCUIT FOR IDENTIFYING LINEAR SIGNALS

Thomas C. Woods, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 17, 1972, Ser. No. 244,537
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 R **7 Claims**

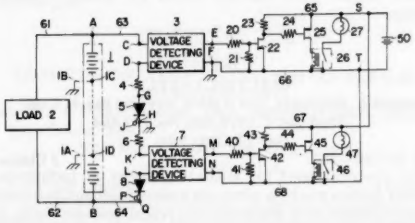


A rate analysis instrumentation system including a sample cell and detector for producing an electrical cell signal proportional to a parameter of a sample reacting within the cell. In a preferred embodiment the enzyme activity of a sample is measured by detecting the light absorbance characteristics of the sample. A differentiator is utilized to obtain a rate signal from the light absorbance characteristic, and the rate signal is displayed. A constant rate detection circuit is used to measure the rate signal only during periods when the reaction rate and the cell signal are linear. The constant rate detection circuit differentiates the rate signal whereby a second derivative of the cell signal is provided. The second derivative signal is compared in a comparator to a threshold value to determine when the second derivative signal approaches zero. An overrange protection circuit is provided for excluding false rate signals, such as signals having characteristics that fail to meet predetermined acceptable limits.

3,786,466
ELECTRICAL LEAKAGE DETECTING DEVICE

Shotaro Naito; Ryoji Kasama, both of Katsuta, and Hiro Sato, Numazu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1972, Ser. No. 235,482
Claims priority, application Japan, Mar. 19, 1971, 46/15142
Int. Cl. G08b *21/00*
U.S. Cl. 340—255 **11 Claims**

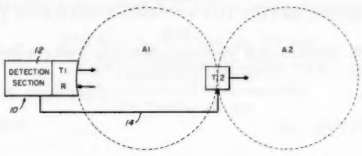


A leakage detecting circuit for detecting leakage from a source of power, for example, a battery to a source of reference potential, for example, ground, which comprises a pair of voltage detecting circuits respectively connected to the positive and negative terminals of the battery to ground through first and second switching means respectively. The battery is insulated from ground, so that if a leakage path exists between the battery and ground, an electrical circuit is closed which includes a voltage detection device and one of the switching means. A voltage is thus applied to the voltage detecting device by closing the switching device. In normal operation, the circuit is open so that no voltage is applied to the voltage detecting device. In alternative embodiments, the voltage detecting devices comprise a neon tube and a photoconductor element responsive to the neon tube, or a coil in circuit with a Hall element.

3,786,467
ALARM DETECTOR WITH INCREASED OPERATING RANGE

William L. Cotter, Beverly, Mass., assignor to Alarmtronics Engineering, Inc., Newton, Mass.

Filed Mar. 22, 1972, Ser. No. 236,868
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 A **11 Claims**



In an ultrasonic alarm detector of the doppler detection type including a transmitter transducer and a receiver transducer, the improvement comprising a second transmitter transducer disposed remote from the detector and driven from the master oscillator at the detector. The second transmitter is preferably disposed at the limiting range of the alarm detector and is directed in the same direction as the transmitter transducer at the alarm detector thereby extending the operating range of the detector to up to twice the range attainable without the second transmitter transducer.

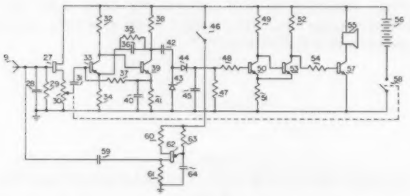
3,786,468
ELECTRIC FIELD PROXIMITY SAFETY ALARM

Melville M. Moffitt, 26 Oxford St., Chevy Chase, Md.

Continuation-in-part of Ser. No. 158,398, June 30, 1971, abandoned. This application Sept. 22, 1972, Ser. No. 291,283
Int. Cl. G08b *13/22*
U.S. Cl. 340—258 D **3 Claims**

This electric field proximity detector enables a worker to detect the presence of a dangerous power line or other electri-

cal source and to then maintain a safe separation from it. A power line need not carry any current as a condition for detection since the device operates on the electric field about the conductor. Response to spurious radiation is eliminated, a sensitivity control is provided to permit setting the device to respond to various fixed combinations of field strength and distance from power lines, a threshold circuit will mark the boundary of safe operation within very narrow limits once the device is adjusted for a particular set of conditions; and a self-



testing feature permits the operator to determine the working condition of the device. This miniaturized device contains its own power supply and loudspeaker, making for easy installation on cranes, aerial personnel baskets, and other types of lifting and construction equipment which may be used near power lines. The alarm circuit may also be used to activate other electrical circuits causing machinery to shut down when the alarm is activated. This device may also be used as a test instrument to detect energized lines and sources.

3,786,469

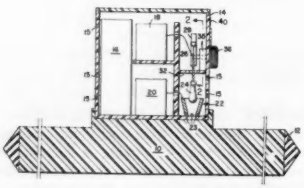
WARNING DEVICE FOR SWIMMING POOLS OR THE LIKE

John D. Massaro, and Michael J. Massaro, both c/o In-Speck Corp. 1414 S. Broad St., Philadelphia, Pa.

Filed Jan. 4, 1972, Ser. No. 215,315

Int. Cl. G08b *21/00*

U.S. Cl. 340—261 **10 Claims**



A movement sensing means carried by a float in the pool is responsive to the movement of the float caused by the waves produced by the falling of an unauthorized object or person into the pool to actuate a wireless transmitter to send a signal to a receiver positioned at a remote location. The receiver, upon receiving the signal, actuates an alarm sounding means which provides a warning signal of the entry of the unauthorized person or object into the pool.

3,786,470

SENSING AND CONTROL SYSTEM

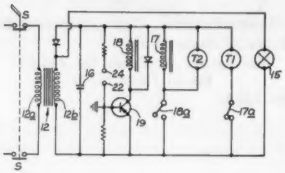
Derek Howard Greenhill, Arthur St., Redditch, England

Filed July 25, 1972, Ser. No. 274,867

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 R **6 Claims**

A sensing and control system for controlling operation of a machine comprises a timer which is arranged to modify the action of the machine after the elapse of a preset time interval from the occurrence of a first given operating condition of the



machine if a second given operating condition does not occur within the interval timed. If the second condition occurs within the interval timed the modifying action of the timer is disabled.

3,786,471

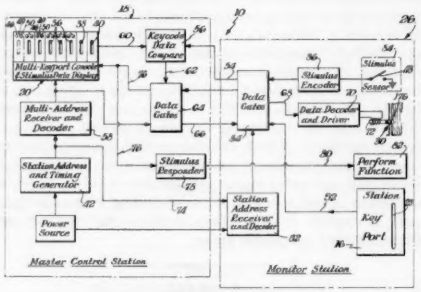
SECURITY MAINTENANCE SYSTEM

Herschel T. Hochman, 7809 Second Ave. S., St. Petersburg, Fla., and Dennis L. Hogan, 6999 31st Ter. North, St. Petersburg, Fla.

Filed Apr. 5, 1971, Ser. No. 131,056

Int. Cl. G08b *19/00*; **E05b** *45/10, 47/00*

U.S. Cl. 340—274 **30 Claims**



A security maintenance system includes an area keyport adjacent a locked barrier at the entrance of a restricted area with a master console disposed remote from the area keyport. The master console has a plurality of individual master keyports. Coded key means are provided for insertion into the area keyport and a master keyport. Scanning means are provided for the master console in conjunction with comparison means between the area keyport and master keyports for cyclically scanning the keyports and inactivating the locked barrier to permit entry to the restricted area when the area keyport and master keyport have identical coded key means inserted therein.

3,786,472

ELECTRIC LEVEL

Frederick L. Scopacasa, 218 Walnut, Newport Beach, Calif.

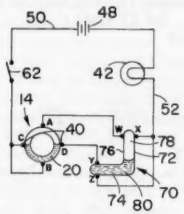
Filed Oct. 7, 1971, Ser. No. 187,464

Int. Cl. G01c *9/06*

U.S. Cl. 340—282 **3 Claims**

An electrical level for measuring angles of inclination, sensing motion and by a particular embodiment automatically sensing change from horizontal to vertical and vice versa. A chamber, e.g., a toroid, is disposed in a fixed manner with respect to a measuring surface. The chamber is approximately half filled with an electrically conductive liquid, e.g. mercury, and has pairs of electrodes embedded in and spaced around

the periphery of the chamber to correspond to the points of liquid contact when the chamber is inclined to predetermined angles. A power means, e.g. a battery, supplies current which passes through the liquid in the chamber to be registered at an appropriate current detecting means, e.g. a light or buzzer, when the liquid contacts an electrode pair. An L-shaped vial



containing an electrically conductive liquid and electrode pairs corresponding to points of liquid contact upon inclination to predetermined angles is used in combination with the above chamber to provide automatic sensing of changes between vertical and horizontal, useful to make and break contacts without recourse to a switch.

3,786,473

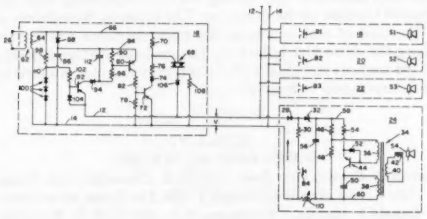
MULTIPLEXING CIRCUIT

John E. Trombly, Billerica, and Warren G. Bender, Wellesley Hills, both of Mass., assignors to Telecommunication Engineering Corporation, Burlington, Mass.

Filed Nov. 1, 1972, Ser. No. 302,895

Int. Cl. H04m *11/02*

U.S. Cl. 340—311 **19 Claims**



A circuit for transmission of power from a source over a line pair to a number of receivers connected to the line pair. Each receiver has a load device adapted for energization by the power source, and a circuit operable to change the impedance across the line pair from a first characteristic adapted for local power reception to a second characteristic adapted to cause remote actuation of a circuit in the source to connect power to the line pair.

3,786,474

CONDITIONING AND WRITING OF MULTIPLE GAS DISCHARGE PANEL

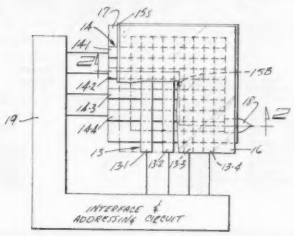
John W. V. Miller, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 13, 1972, Ser. No. 234,387

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 M **4 Claims**

There is disclosed the improved electronic conditioning and addressing of a multiple gas discharge display/memory panel. In the operation of a row-column gas discharge display/memory panel which comprises a discharge cell matrix wherein one or more discharge cells are to-be-addressed along a common row or column and wherein the border of the panel matrix comprises a plurality of pilot cells, the improvement wherein the to-be-addressed cells are electronically conditioned before addressing by applying a conditioning voltage pulse to the common row or column of to-be-addressed cells and wherein a low impedance electrical path is provided between the conditioned row or column of cells and all of the rows or columns of cells orthogonal to the conditioned row or column so as to



return the conditioned cells to a neutral state, the magnitude of the conditioning pulse being sufficient to cause discharge of cells in the off-state, but not sufficient to cause discharge of cells in the on-state, and simultaneously applying an addressing voltage to each conditioned to-be-addressed cell immediately after the conditioning voltage pulse without returning the to-be-addressed cell to a neutral state.

3,786,475

SELECTOR FOR APPARATUS FOR AUTOMATICALLY PLAYING BACK INFORMATION

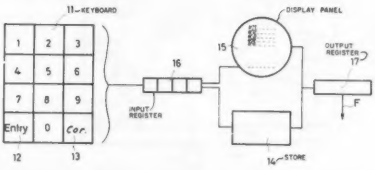
Marcel Jules Helene Staar, 479 Avenue Louise, Brussels, Belgium

Filed Sept. 7, 1971, Ser. No. 177,986

Claims priority, application Belgium, Sept. 7, 1970, 755811

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **7 Claims**



A selector for apparatus for automatically playing back information comprising a keyboard (**11**) used in formulating a selection and co-operating with a store (**14**) and a panel (**15**) for displaying signs corresponding to those identifying the keys which have been pressed. The numbers, words or combinations can be stored in sequence and in the order in which they have been formulated.

An input register (**16**) is disposed between the keyboard (**11**) and the store (**14**) and is adapted to receive a complex selection so that the latter can be checked before insertion into the store. (FIG. **1**).

3,786,476

TELEVISION TYPE DISPLAY SYSTEM FOR DISPLAYING WAVEFORMS OF TIME-VARYING SIGNALS

William P. Graves, Brighton; Francis C. Passavant, West Newton, and Allen J. Worters, Newton Highlands, all of Mass., assignors to GTE Sylvania, Incorporated, Stamford, Conn.

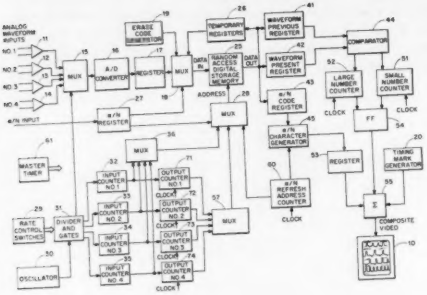
Filed Mar. 1, 1972, Ser. No. 230,709

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **25 Claims**

Television display system for displaying waveforms of time-varying signals. The displayed waveforms move across the dis-

play screen. Several different waveforms may be displayed at the same time, each moving at a different rate. Alphanumeric



characters which remain fixed in position may also be displayed on the same screen.

3,786,477

METHOD AND CIRCUIT ARRANGEMENT FOR SELECTIVELY DEPICTING LIKE SYMBOLS WITH DIFFERENT CONFIGURATIONS

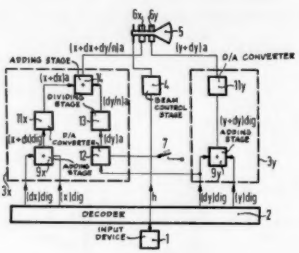
Heinrich Baumgartner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 24, 1972, Ser. No. 256,385

Claims priority, application Germany, July 5, 1971, P 21 33 400.9

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **3 Claims**



A method for selectively depicting like symbols with different configurations upon the picture screen of a cathode ray tube, utilizing cooperable intensity control of the cathode beam and two coordinate deflection values derived from digital reference point coordinate values for designating the position at which the symbol involved is to be formed and digital symbol point coordinate values for designating the position of a beam-dot within the area in which the symbol is to be formed, with the reference and point digital coordinate values for each pair of cooperable reference and point coordinate values being combined and converted to form a corresponding analog deflection value, for each coordinate deflection direction, whereby the deflected cathode beam is operative, under cooperable intensity control, to depict such a symbol with a predetermined configuration, and a symbol with a different configuration is depicted by selectively varying the deflection in one coordinate direction by the utilization of an additional deflection value, in analog form, derived from the digital symbol point coordinate value utilized in the formation of the other deflection value; and control circuit arrangements for carrying out such method.

3,786,478

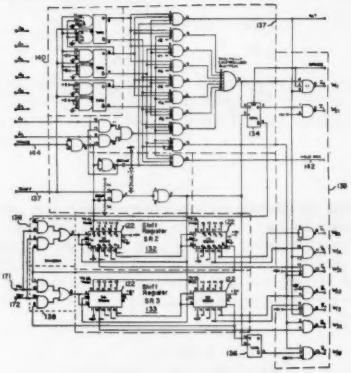
CATHODE RAY TUBE PRESENTATION OF CHARACTERS IN MATRIX FORM FROM STORED DATA AUGMENTED BY INTERPOLATION

Paul Allen King, Jr., Cambridge, Mass., assignor to Massachusettes Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 50,641, June 29, 1970. This application Aug. 17, 1972, Ser. No. 281,596

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **7 Claims**



Apparatus is disclosed for displaying a selected character on the face of a cathode ray tube at a particular location from information previously stored in a memory. The cathode ray tube is swept in a raster scan with a superimposed sinusoidal deflection in the *y*-axis direction. The intensity modulation which produces a dot-like representation of a character occurs at a particular time during the scan depending upon the desired location of the character. The intensity modulation as a function of time is unique for each character and occurs along the sinusoidal deflection. The required storage capacity of the memory storing the character information is reduced by an interpolation technique.

3,786,479

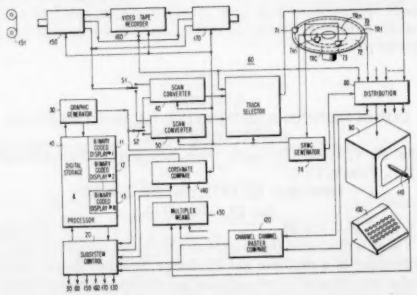
VIDEO DISPLAY SYSTEM

Caroll J. Brown, San Jose; Donald J. Chesarek, Los Gatos; Dale E. Fisk, San Jose; Joseph T. Ma, Los Gatos, all of Calif.; Harold F. Martin, Chappaqua, N.Y., and Zack D. Reynolds, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 782,154, Dec. 9, 1968, abandoned. This application June 18, 1971, Ser. No. 154,581

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **5 Claims**



A display system that uses a digital storage and processor having stored therein a plurality of sources of binary coded in-

formation representative of a plurality of display messages and patterns. A graphic generator converts coded information into analog stroke or painted display information. This stroke information and/or asynchronous display information from other sources is converted into television raster information which is then cyclically stored on a magnetic disk, together with displays from other synchronous noncoded and coded sources as well as live television. A plurality of remote stations can select any display information which is converted as necessary to raster video information. These frames may be recorded on one or more tracks of the magnetic disk. This information is then applied to the television monitor at the station. The operator at the station can then control the processing of the binary coded information and request other display material while viewing the monitor and in addition, can correlate portions of images on the CRT display with the originating digitally controlled stroke information. Furthermore, raster information of several selected tracks as well as synchronized video from other sources can be compared and/or mixed.

3,786,480

DIGITAL DISPLAY SYSTEM OF FLOATING POINT REPRESENTATION

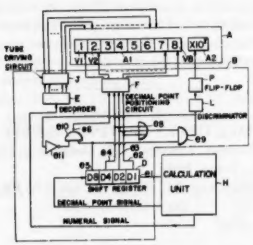
Isao Hatano, and Kazuaki Urasaki, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan

Filed Nov. 24, 1971, Ser. No. 201,856

Claims priority, application Japan, Nov. 25, 1970, 45/105295

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 R **28 Claims**



A digital display system of floating point representation for use in an electronic calculator for displaying a decimal number in the form of effective figure representation together with an index $X10^n$, which means the use of n-th power of the base 10. This system is provided for enabling the result of an arithmetic operation, which has a number of digits exceeding the capacity of the display device, to be easily read.

3,786,481

DIGITAL TELEVISION CHARACTER GENERATOR

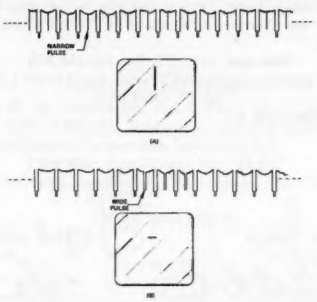
Gary F. Hartman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1972, Ser. No. 245,412

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 AD **7 Claims**

A means for causing characters such as numbers, letters and the like to appear on a CRT screen by selectively adding various combinations of narrow and wide electronic pulses to the raster scan of the CRT such that the characters are presented



on the screen in either black or white, superimposed on any other image presentation.

3,786,482

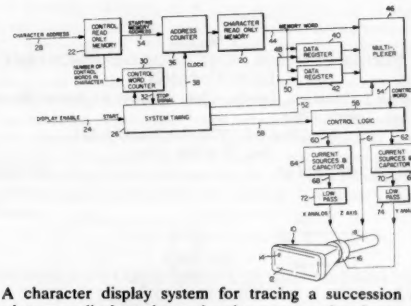
APPARATUS FOR GENERATING AND DISPLAYING CHARACTERS BY TRACING CONTINUOUS STROKES

Jason N. Puckett, Jr., Los Angeles; Stephen L. Kurtin, Sherman Oaks, and Arnold J. Goldman, Encino, all of Calif., assignors to Lexitron Corporation, Chatsworth, Calif.

Filed Mar. 13, 1972, Ser. No. 234,040

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **11 Claims**



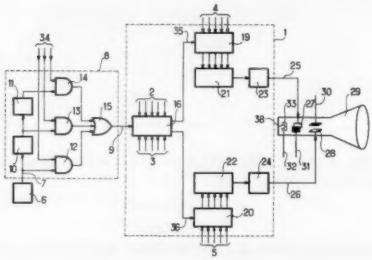
A character display system for tracing a succession of strokes on a display tube to thereby generate the character. The digital information necessary to generate the proper number of strokes in the correct sequence is stored in a character read-only memory, each location of which provides memory words of 16 bits, one or more portions of each memory word being latched into one or more data registers at predetermined time intervals after the memory word is available. A multiplexer is provided to route the correct bit from the memory or the one or more registers to each of the six multiplexer outputs to create control words of six bits. Control logic is provided to respond to the control words to generate digital signals for selectively incrementally charging two capacitors to control the vertical and horizontal deflection fields respectively of the display tube. The charging of each capacitor is accomplished by combinations of whole and fractional units of positive charging current above a predetermined negative level to provide the appropriate analog signals for the deflection circuitry. The control word also controls the unblanking amplifier of the cathode ray tube circuitry.

A control read-only memory is provided to accept information indicative of the character and provide outputs indicative of the number of strokes required for that particular character and memory address information for the character read-only memory.

3,786,483
BRIGHTNESS CONTROL FOR A COLOR CATHODE RAY TUBE

Dusan Sinobad, Paris, France, assignor to Compagnie Industrielle des Telecommunications CIT-ALCATEL, Paris, France

Filed Apr. 21, 1972, Ser. No. 246,378
Claims priority, application France, Apr. 21, 1971, 7114136
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 7 Claims

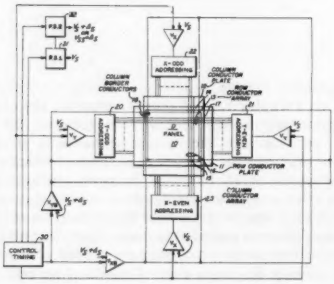


Device for controlling the brightness of the trace of vectors on the screen of a cathode tube, which is more particularly polychromatic, comprising a clock, a vector generator and means for making the brightness of the trace vary. These means consist of frequency dividers connected to the output of the clock and supplying, to the vector generator, adjustable frequency pulses.

3,786,484
BORDER CONTROL SYSTEM FOR GAS DISCHARGE DISPLAY PANELS

Joseph L. Miavecz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 23, 1971, Ser. No. 211,371
Int. Cl. G08b 5/36
U.S. Cl. 340—324 M 11 Claims

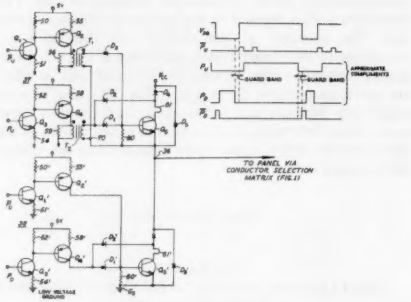


In gaseous discharge display panels of the cross conductor matrix type the conductors are non-conductively coupled to a thin gaseous discharge medium, one technique for conditioning the data or information display sites in the panel for operation of uniform potentials is to maintain the border discharge sites in an on or fired condition. The invention is directed to an improved system for controlling the border sites of such panels and provides for a border writer for (1) sustaining the border, (2) writing the border (3) erasing the border during long idle periods to minimize aging (4) border conditioning (all four sides), (5) border firing at reduced frequency to reduce or minimize the effect of aging as an alternative to (3) and (6) sustaining the border at a slightly higher voltage level.

3,786,485
BAKER CLAMPED SUSTAINER VOLTAGE GENERATOR FOR PULSING DISCHARGE DISPLAY PANEL

David S. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 22, 1971, Ser. No. 210,864
Int. Cl. G08b 5/36
U.S. Cl. 340—324 M 6 Claims

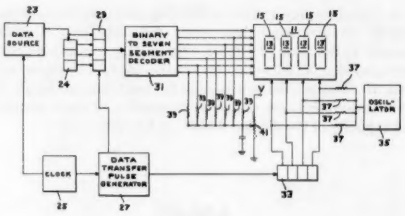


There is disclosed an improved sustaining voltage supply system for driving a gas discharge display panel having row-column conductor arrays, the matrix cross points of which are non-conductively coupled to a gaseous discharge medium in the panel. A pair of Baker clamped switching transistor amplifier circuits are series connected and have the intermediate point therebetween connected to supply square wave sustainer output voltages to the panel. Each amplifier circuit is provided with a Baker clamp diode circuit to avoid deep conduction or saturation operation of the switching transistors. The rise and fall times of the high power square wave output voltages are thereby much sharper and faster response to control signals by the circuit is achieved.

3,786,486
MULTIPLEX DRIVING CIRCUIT

Vincenzo N. Torresi, Tenafly, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Aug. 11, 1971, Ser. No. 170,803
Int. Cl. G09f 9/32
U.S. Cl. 340—336 5 Claims

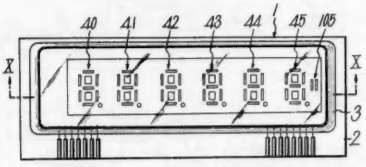


A multiplex circuit for driving a multicharacter liquid crystal display, each character having a segmented and a common electrode, which selectively applies an actuating voltage to selected segmented electrodes of all the characters in parallel while applying an AC erasing voltage to the common electrodes of all the nonselected characters. The common electrode of the selected character is set to a reference potential.

3,786,487
DISPLAY DEVICE

Yuzuru Yanagisawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 8, 1971, Ser. No. 187,700
Claims priority, application Japan, Oct. 15, 1970, 45/90650
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **15 Claims**

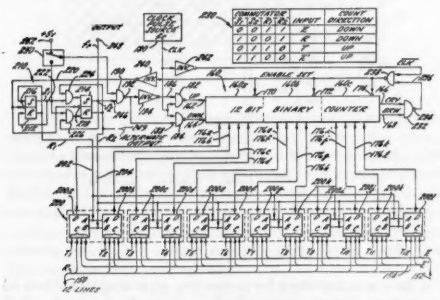


A display device for electronic computers, calculators and the like in which indicator electrode units, each comprising anode and cathode segments lying in the same plane in an envelope and in which all of the cathode segments are simultaneously energized for a predetermined desired configuration and the anode electrodes are energized on a time sequential basis in such a manner that only the cathode segments of the indicator electrode unit having its anodes energized will glow at a particular time. The individual respective cathode segments of each indicator unit are connected in parallel, and accordingly the number of leads to the display device is substantially reduced, as compared with conventional indicators which require separate leads for energizing the cathode segments respectively. The display device is provided with means for producing charged particles within the envelope to facilitate glow discharge of a particular indicator unit.

3,786,488
ALGEBRAIC SUMMING DIGITAL-TO-ANALOG CONVERTER

Joseph Robert Ahlgren, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed Dec. 30, 1971, Ser. No. 214,162
Int. Cl. G06f *7/385*; **H03k** *13/02*
U.S. Cl. 340—347 DA **17 Claims**

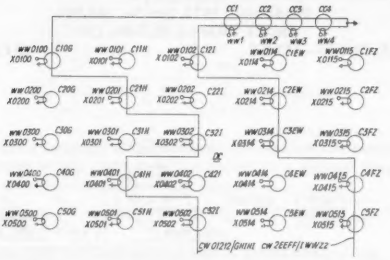


A signal conversion circuit in which there is developed an output signal having analog characteristics which vary with the algebraic sum of the numerical values represented by a plurality of changeable binary coded input signals. The loading of a binary up-down counter is controlled by a multiplexing switching unit so that the counter is preset consecutively to the numerical values of the successive input signals while being driven at a high counting rate in a direction and for a period corresponding respectively to the sense and value of the respective input signals. The operative state of the counter is effectively monitored to produce an output signal having a period which varies linearly with the algebraic sum of the input signals. In an alternate embodiment an output signal is produced which has a DC energy content proportional to the binary magnitude of a single input signal.

3,786,489
CODE TRANSLATOR

Robrecht H. K. Verstraelen, and Luciaan H. E. Van Heddegem, both of Edegem, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,561
Claims priority, application Netherlands, Mar. 9, 1971, 7103152
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **6 Claims**

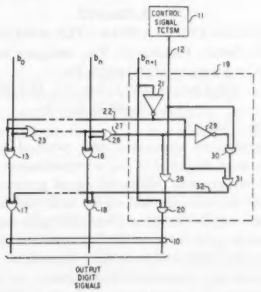


This invention provides an improved magnetic core matrix code translator wherein each core in the decoder section thereof covers two digital possibilities rather than a "unique" digit representation. Moreover, each of the code wires running through the decoder cores is divided at the output thereof into anywhere from 2 to 32 branch lines which are then run through the cores of a coder stage to form 1-out-of-32 possibilities. These lines each terminate in a transistor switch operated by a control circuit. Since each decoder core represents two possibilities, selection of but one transistor switch is required, and is effected by the control in response to a gated output determined by the "control" bits of each code element.

3,786,490
REVERSIBLE 2'S COMPLEMENT TO SIGN-MAGNITUDE CONVERTER

Robert Warren Hallock, Point Pleasant, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 20, 1972, Ser. No. 245,944
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **8 Claims**



Two tandem-connected stages of EXCLUSIVE OR circuits transmit numerical digits of a signed multidigit binary signal

representation. In the first stage a sign digit signal is EXCLUSIVE ORed with the numerical digits to drive the second stage circuits. In addition, the sign digit is ORed with the numerical digits to produce an enabling signal which is cooperatively employed with the sign digit and a control signal, indicating direction of conversion, for controlling the state of the output sign digit and for controlling the operation of the second stage of EXCLUSIVE OR circuits in regard to conversion algorithm deviations required for certain zero character and overflow character signal representations.

3,786,491

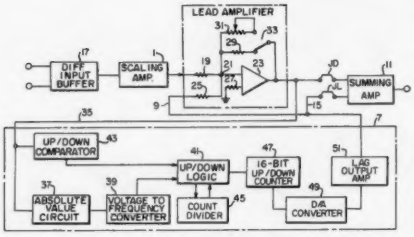
DIGITAL INTEGRATION APPARATUS AND METHOD

James T. Carleton, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1972, Ser. No. 268,951

Int. Cl. H03r *13/20*; **G08c** *1/00*

U.S. Cl. 340—347 NT **15 Claims**



A digital integration apparatus and method which utilizes pulse count division to provide a broad range of easily selectable time constants. Pulses generated by a voltage-to-pulse conversion are divided down by a factor of 2 in a number of selectable steps and accumulated in a digital counter. A digital-to-analog conversion generates an output signal proportional to the accumulated count. A continuous selection of time constants over an extended range is available through selection of the desired step of pulse count division followed by vernier adjustment of the conversion ratio of the voltage-to-pulse conversion. The invention is described as applied to compensation networks utilized in instrumentation circuitry.

3,786,492

COMPENSATION APPARATUS AND METHOD

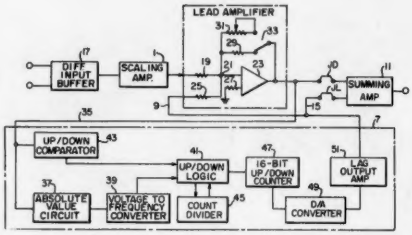
James T. Carleton, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1972, Ser. No. 269,000

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 CC **24 Claims**

A Compensation apparatus and method which provides either gain, lead, lag or lead-lag compensation utilizing a single step of integration. An error signal generated as the difference between the applied signal and the output of an integrator serves as the input to a variable gain stage. The output of the variable gain stage is the input to the integrator. Lead and lag jumpers selectively connect the outputs of the variable gain stage and the integrator, respectively, to the inputs of an output summer. The lead time constant is determined by the time constant of the integrator and the lag time constant is equal to the lead time constant divided by the gain of the variable gain stage. Gain compensation is obtained by utilizing both the lead and lag jumpers and setting the variable gain to unity. The hybrid network combines a digital integrator having an extended range of easily selectable time constants with analog gain and summing circuits.



3,786,493

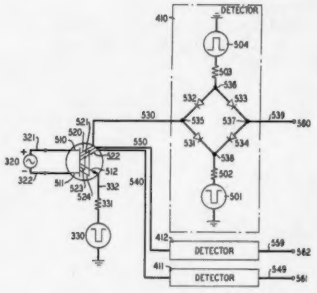
ANALOG TO DIGITAL CONVERTER USING A DRIFT TRANSISTOR

Gary Lee Baldwin, Sea Girt, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 10, 1972, Ser. No. 279,745

Int. Cl. G08c *5/00*; **H03k** *13/00*

U.S. Cl. 340—347 AD **10 Claims**

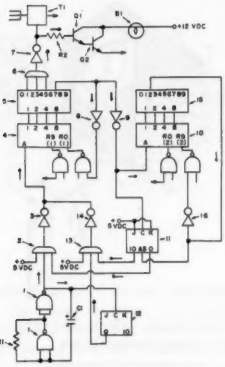


A device is described for converting an analog signal into an equivalent digital representation thereof. A single drift transistor having a plurality of collectors, a base with dual contacts, and a single emitter is operated to effect the conversion a word at a time. The drift field is established by the analog signal to be encoded as it is applied differentially to the dual base. When a pulse of charged carriers is injected into the emitter, the pulse travels through the semiconductor material to at least one of the collectors. By employing a fixed sampling time and by arranging the plurality of collectors in the form of a binary code matrix, the digital representation of the applied analog signal is obtained in the single step inherent in word-at-a-time encoders.

3,786,494
ELECTRONIC AUTOMATED SOS DEVICE

Fayette M. Clark, 2147 Waynoka Rd., Euclid, Ohio

Filed Apr. 28, 1972, Ser. No. 248,723
Int. Cl. G08c *1/00*
U.S. Cl. 340—356 **6 Claims**

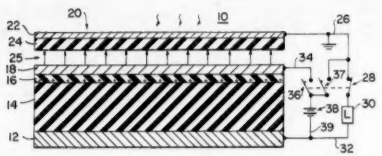


A system for generating a repetitive SOS code message using binary to binary decimal conversion.

3,786,495
STORED CHARGE TRANSDUCER

Wendell Spence, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 17, 1972, Ser. No. 255,300
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 C **16 Claims**



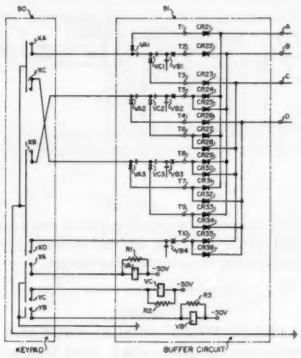
A transducer for converting mechanical energy to electrical energy is described. The transducer utilizes the charge trapping characteristics of a silicon-oxide silicon-nitride interface to create an electric field between a solid conductor and a flexible conductor. As the flexible conductor changes due to mechanical forces applied thereto, the dimensions of the gap correspondingly change and the voltage thereacross changes, thereby providing a voltage corresponding to the mechanical motion of the flexible conductor.

3,786,496
KEY PAD CONTROL ARRANGEMENT

George Verbaas, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratorie Incorporated, Northlake, Ill.

Filed July 25, 1972, Ser. No. 275,023
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 S **6 Claims**

An arrangement for selectively connecting a control potential, such as ground, to one out of *n* outputs, or preferably to a group of 1-or-2-out-of-4 coded output terminals, by means of a keypad of present-day vintage, which has two sets of control contacts, one set respectively linked to the columns of the keys and the other to the rows of the keys. The arrangement

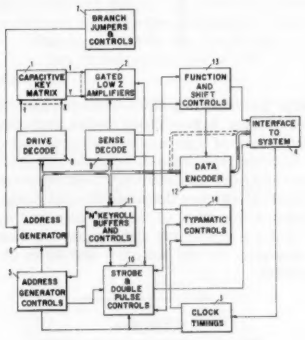


requires a minimum number of conversion relays and permits mounting of the conversion equipment on a printed circuit card affixed to the bottom of the keypad.

3,786,497
MATRIX KEYBOARD METHOD AND APPARATUS

Robert H. Davis, and Jon E. Fox, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1972, Ser. No. 276,484
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 S **16 Claims**



A digital encoding keyboard apparatus based on the use of a series of switches arrayed in a matrix configuration is disclosed, together with circuitry for scanning, detecting, shifting, preventing multiple detection, and encoding an output.

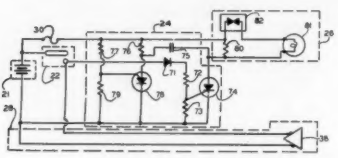
3,786,498
AUDIO-VISUAL WARNING SYSTEM

Gordon C. Lipe, West Lake Rd., and William S. Abbott, 20 Lakeview Circle, both of Skaneateles, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,125
Int. Cl. G08b *7/00*
U.S. Cl. 340—371 **2 Claims**

An audio-visual warning system for mechanized vehicles which is activated by a single act of the vehicle's operator.

This is accomplished by connecting an audio warning element, such as a horn, and a visual warning element, such as a light, in parallel with a horn button and a power supply. Thus when the



horn button is depressed the circuit is closed and both an audible sound and visible light are emitted to warn approaching traffic and pedestrians of an impending danger.

3,786,499

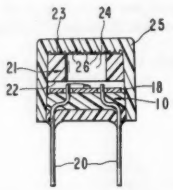
ALPHA-NUMERIC DISPLAY PACKAGE

Alfred S. Jankowski, San Jose; John L. Moll, Stanford, and Ernest J. Funk, Cupertino, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 16, 1972, Ser. No. 307,280

Int. Cl. G08b *5/36*

U.S. Cl. 340—378 R **8 Claims**



A package for displaying alpha-numeric characters using a plurality of discrete, light-emitting diodes, each diode providing a point source of light corresponding to one of the segments of the characters when electrically activated, including a substrate having the light-emitting diodes mounted upon it; a block of material adjacent the substrate containing a plurality of light pipes in the shape of the segments; and a composite fly's eye lens on top of the light pipes for displaying the selected character by the selective activation of the light-emitting diodes.

3,786,500

FIBER OPTIC TRANSLATOR

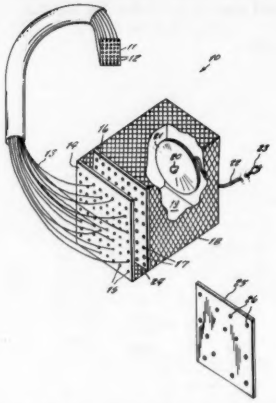
Robert J. Fiorletta, and Carol J. Fiorletta, both of 12028 Wheaton, Sterling Heights, Mich.

Filed Aug. 3, 1971, Ser. No. 168,625

Int. Cl. G08b *5/00*

U.S. Cl. 340—380 **1 Claim**

A device of optical type which may be used in an educational game or toy or which alternately can be used in a security check system, the device consisting of a common 5 by 7 dot matrix display composed of 35 single strands which at their opposite ends are connected to a light receiver block provided with 64 openings, the 35 single strands being so connected to the 64 openings so to form a pattern for an end coder, the light receiver block being aligned with a light concentration block having 64 openings aligned with the openings of the light receiver block, the light concentration block forming one end of a box containing an incandescent lamp and reflector, and a square decoder card is placeable between the light concentration block and the light receiver block, the decoder card having openings therethrough which are aligned with the openings of the light concentration block.



3,786,501

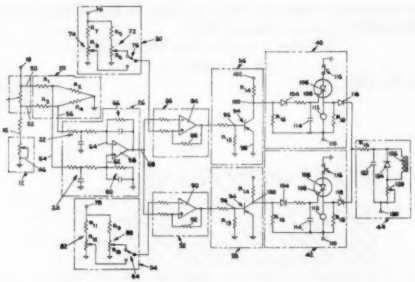
CURRENT MONITORING SYSTEM AND METHOD

Costas S. Marnerakis, 2980 Bryon Center Rd., Wyoming, Mich.

Filed July 14, 1971, Ser. No. 162,401

Int. Cl. G08b *21/00*

U.S. Cl. 340—409 **34 Claims**

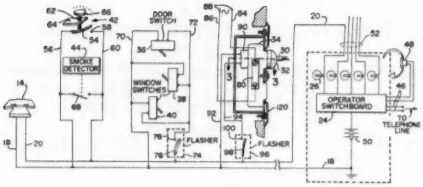


An electronic current monitoring system and method in which a current in a transmission line is detected, converted to an output voltage representative of the value of the current and compared with reference voltages representative of minimum and maximum current values in the transmission line. An alarm signal is generated in the event that the output voltage drops below the minimum reference voltage or rises above the maximum reference voltage. Two or more alarm currents can be monitored simultaneously, each alarm current representing a different condition at a subscriber station with a separate alarm being given for each alarm current which represents a different condition at the subscriber station. An alternating current signal can be impressed on the transmission line and detected with the frequency thereof compared to predetermined values to detect tampering with the alarm system. An alarm is activated in response to an alarm signal in the event the frequency in the line changes from the predetermined frequency value. The reference voltages are adjustable to adjust the tolerance level from the normal current and, in addition, alternate reference voltages are coupled to the system by a switch so that different reference voltages can be switched into the line to quickly change the level of current being monitored.

3,786,502
SECURITY SYSTEM

Joseph L. Stendig, 2500 Riverside Dr., and Claude A. Davis, 568 Piney Forest Rd., both of Danville, Va.

Filed Dec. 17, 1971, Ser. No. 209,180
Int. Cl. G08b 19/00
U.S. Cl. 340—416 16 Claims

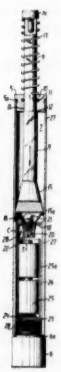


An integrated security system including a microswitch monitored, alternating current receptacle adapted to be mounted in a standard wall-box and further adapted to receive a standard two-prong plug and which is connected with a local telephone system to provide a distinct alarm signal upon removal of the plug; additional switching devices are connected with the telephone system to appraise the operator by distinct signals of the occurrence of unauthorized entry, fire and/or smoke at any of a plurality of remote locations.

3,786,503
EARTH MOVEMENT INDICATOR

Eugene E. Webb, and Leo G. Kopelman, both of East Bank, W. Va.

Filed Nov. 17, 1972, Ser. No. 307,221
Int. Cl. E21d 21/02; G08b 21/00
U.S. Cl. 340—421 10 Claims

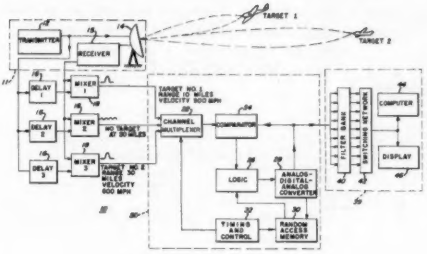


An explosion-proof subsidence-indicator for mines, tunnels and earthworks including a non-conductive body including a battery-actuated warning-light encased in a sealed chamber, and a spring-loaded probe extending outward from the chamber to engage the mine roof.

3,786,504
TIME COMPRESSION SIGNAL PROCESSOR

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 787,506, Dec. 27, 1968, abandoned.
This application Mar. 29, 1971, Ser. No. 129,218
Int. Cl. G01s 7/30, 9/02
U.S. Cl. 343—5 DP 10 Claims

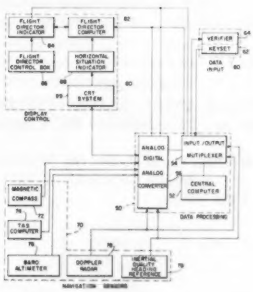


A time compression system used for spectrum analysis of multi-channel digital systems in which there are X identical input channels and Y identical filters. Each input is sampled in parallel and then quantized with an analog-to-digital converter. The inputs are then stored channel by channel in a random access memory. Readout begins at the end of the sample interval and each channel is read out serially. The stored digital signals are converted back to serial analog signals and fed to a single bank of filters for spectrum analysis.

3,786,505
SELF-CONTAINED NAVIGATION SYSTEM

John Coyne Rennie, 33 Third Ave., Burlington, Mass.

Filed Mar. 4, 1970, Ser. No. 16,521
Int. Cl. G01s 9/46; G06g 7/78
U.S. Cl. 343—7 ED 12 Claims

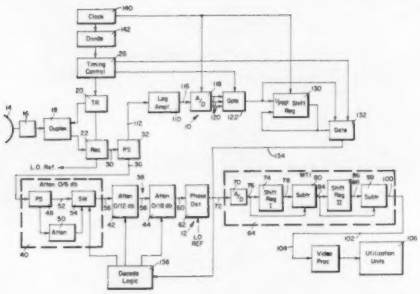


Coordinates of fixed initial and destination points and desired approach direction are stored in an on-board programmed computer which is turned on when an aircraft passes the initial point. From aircraft speed, heading and altitude inputs, bank and attitude instructions are generated to return aircraft to a computed curved path between the points. When an aircraft leaves a path corridor, a new path is computed. All-weather approaches are accomplished without requiring local approach aids at airports.

3,786,506
DYNAMIC RANGE CONTROL SYSTEM

David D. Effinger, La Habra; Norol T. Evans, San Pedro, and Vaughn H. Estrick, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 10, 1972, Ser. No. 233,834
Int. Cl. G01s 9/06
U.S. Cl. 343—7 A 12 Claims

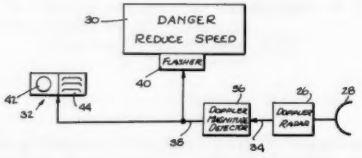


An automatic dynamic range control system for eliminating dynamic gain limitations that may provide undesirable effects in the moving target indicator or video processor portions of a radar system. A separate auxiliary measurement channel is provided in parallel with the main IF channel having a logarithmic amplifier or sequential logarithmic detector with sufficient dynamic range to meet the signal requirements. At each range bin in the auxiliary channel, the IF signal is quantized in amplitude above the predetermined dynamic range of the main channel by selecting relatively large input signal level ranges which, in the system, provides a relatively low quantizing accuracy without substantially decreasing the system reliability. The quantized levels are then passed through a switch which selects the last PRF interval used for a fill pulse (such as in an MTI system) and places the quantized signals into a 1/PRF shift register. The quantized levels are then used in subsequent sweeps of the dwell period during each range bin to attenuate signals in the main IF channel that would be limited by gain characteristics of that channel. By utilizing predetermined gain control quantized values for an entire dwell period, undesired amplitude modulations that may affect the moving target indicator or processing operation are eliminated.

3,786,507
VEHICLE ANTI-COLLISION SYSTEM

Calvin F. Hurd, Jr., 2176 Delaware Dr., Cleveland Heights, Ohio

Filed Nov. 11, 1971, Ser. No. 197,742
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED 11 Claims

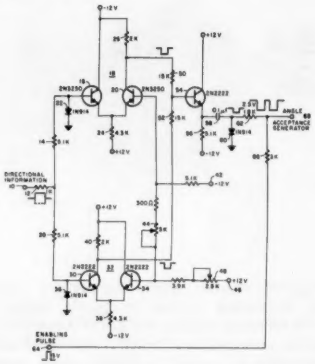


A doppler radar is mounted to face rearwardly of a roadway vehicle and to respond only to reflected radar signals from objects, e.g., following vehicles, which approach at a predetermined closing velocity, and an indicator for signalling both to the following driver by means of lights on the radar equipped vehicle and to the driver of the radar equipped vehicle itself.

3,786,508
HIGH SPEED ANGLE GATE

Criley Orton, Riverside, and Allen D. Ehresman, Corona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1969, Ser. No. 857,629
Int. Cl. G01s 7/02
U.S. Cl. 343—7 A 3 Claims

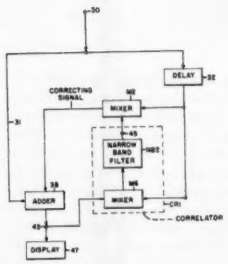


A high speed angle gate for preventing the passage of an accept pulse in a seeker system if the incoming directional information is from a target outside prescribed angular limits. Two different difference amplifiers produce negative outputs when the input signal exceeds a predetermined value. The negative signal then cancels the positive enabling pulse by adding the two signals.

3,786,509
AUTOMATIC CANCELLER

Sidney P. Applebaum, Liverpool, and James C. Kovarik, North Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Nov. 21, 1962, Ser. No. 239,875
Int. Cl. G01s 9/42
U.S. Cl. 343—17.1 11 Claims



1. In a processor for eliminating undesired signals from among a plurality of desired signals, means including a first terminal for receiving all said signals, means including an adder and a first circuit for transmitting all said signals from said first terminal to said adder to produce residue signals, means including a delay line and a second circuit for transmitting all said signals from said first terminal through said delay line to produce delayed signals, cross correlator means coupled to receive said residue signals and said delayed signals, said cross correlator serving to multiply said residue

signals and said delayed signals and to integrate the product to provide a control signal, mixer means receiving said control signal and said delayed signals and generating a correcting signal with phase and amplitude adjusted to cancel undesired signals, and means for transmitting said correcting signal to said adder to cancel said undesired signals, said adder thereby providing improved residue signals substantially free of undesired signals.

3,786,510

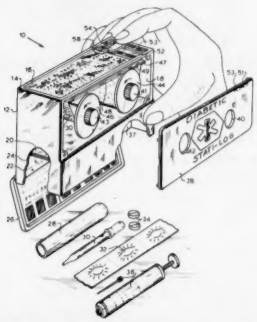
MEDICAL TESTING AND DATA RECORDING APPARATUS

Franklin Reeder Hodges, 26 Pelham Rd., Colonial Villa, Apt. J-3, Greenville, S.C.

Filed July 26, 1972, Ser. No. 275,140

Int. Cl. A61b *5/00*

U.S. Cl. 346—33 ME **4 Claims**



A container includes means for testing a manifestation of health, as a urine specimen of a diabetic, and means for cumulatively recording data indicative of the results of the test.

3,786,511

RECORDING APPARATUS

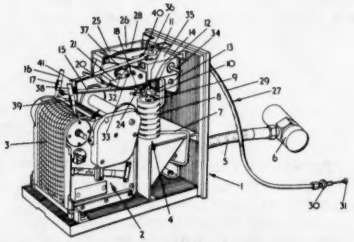
John Joseph Bates, Hednesford; Eric Arthur Jackson, and Gordon Smith, both of Burton upon Trent, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed May 3, 1973, Ser. No. 356,941

Claims priority, application Great Britain, May 11, 1972, 22,144/72

Int. Cl. G01d

U.S. Cl. 346—33 **6 Claims**



The recorder comprises a hydraulic pressure recorder section and a mechanical movement detector section which enable the recorder simultaneously to monitor the hydraulic pressure in mine roof support system and the roof convergence. The hydraulic pressure recorder section comprises a coiled, hollow Bourdon tube gauge interconnected to an arm which carries a chart marking pen. The mechanical movement detector section comprises a spring loaded drum assembly which is rotated by a Bowden cable secured at its other end to two relatively movable members of the roof support, the members being moved relative to one another upon convergence of the mine roof. Rotation of the spring loaded drum assembly moves a further arm which carries a further chart marking pen.

3,786,512

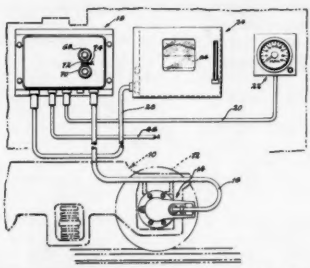
LOCOMOTIVE INFORMATION RECORDER

David D. McCue, and Thomas A. Brendle, both of Hamburg, N.Y., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Dec. 4, 1967, Ser. No. 687,589

Int. Cl. G01d *9/38*

U.S. Cl. 346—33 D **6 Claims**



A permanent record is made of the speed of a locomotive on a linear basis proportional to distance travelled. The record paper drive and the speed indicator drive are derived from a common signal whose frequency and amplitude are proportional to vehicle speed. The mechanism is mounted in a housing having a door. Opening the door interrupts the paper take-up drive while a separate hand operated device, when actuated, restores the take-up drive while terminating the paper speed drive.

3,786,513

RECORDING APPARATUS FOR RECORDING ON A PLURALITY OF TRACKS

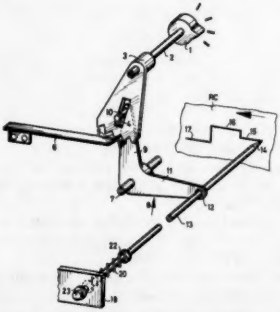
Hans Zimmermann, Schwenningen; Eduard Schuh, Villingen; Heinz Kelch, Buchenberg, and Norbert Helmschrott, Schwenningen, all of Germany, assignors to Kienzel Apparate, Villengen, Black Forest, Germany

Filed Feb. 22, 1973, Ser. No. 334,941

Claims priority, application Germany, Feb. 24, 1972, P 22 08 714.5

Int. Cl. G01d *9/28, 9/36*

U.S. Cl. 346—62 **13 Claims**



In an apparatus for recording lines on a movable record carrier, a biased recording pin, whose point is urged into contact

with the record carrier, is mounted in two knife edge bearings for longitudinal and angular movement. One bearing is stationary, and the other mounted on manually operated setting lever which can be operated to place the recording pin in different angular recording positions for recording lines on parallel tracks of the record carrier. The recording pin can be oscillated with a resilient arm to make a zig-zag beam-shaped recording.

3,786,514

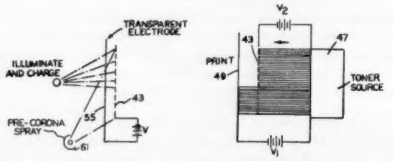
METHOD AND APPARATUS FOR CHARGED APERTURE CONTROLLED ELECTROSTATIC IMAGE REPRODUCTION

Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to ElectroPrint Inc., Cupertino, Calif.

Division of Ser. No. 776,146, Nov. 15, 1968, Pat. No. 3,647,291. This application July 28, 1971, Ser. No. 167,006

Int. Cl. G03g *15/00*

U.S. Cl. 346—74 ES **4 Claims**



The invention relates to apparatus and methods for constituting or reproducing images through the use of a multilayered screen consisting of an array of apertures from facsimile read-out arrangement. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate.

In the facsimile read-out arrangement the electrostatic charge pattern is laid down by a charging stylus through relative movement with the electrostatically chargeable multilayer screen. The screen may be flat or comprise a drum or other configuration and the insulative layer of the screen is preferably substantially non-light sensitive with print out made by passing charged particles through the stylus charged screen in accordance with signal modulation to paper wherein relative motion is established between the screen and paper.

3,786,515

LATENT IMAGE RECORDING METHOD AND ELECTRIC RECORDING APPARATUS

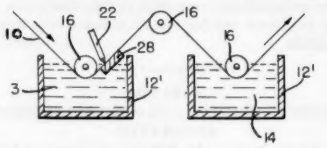
Ra W. Walker, Cleveland, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed June 19, 1972, Ser. No. 264,378

Int. Cl. G03g *13/00*

U.S. Cl. 346—74 E **4 Claims**

An improvement in the method and apparatus for generating imagery in which information from either an original document or an electronic input is placed on paper or other suitable record medium by the use of control element(s) which establish an electric field adjacent to the record medium; the recording element(s) being immersed in liquid, described in U.S. Pat. 3,623,122 which improvement consists in separating



the image forming step from the development step and the apparatus for accomplishing the same.

3,786,516

DEFLECTION ELECTRODE DEVICE FOR AN INK JET PRINTING APPARATUS

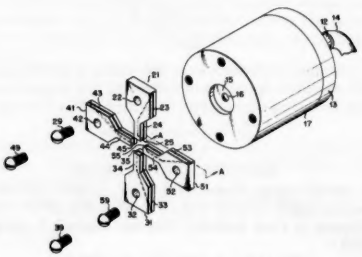
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1971, Ser. No. 207,320

Claims priority, application Japan, Dec. 16, 1970, 45/125400; Dec. 16, 1970, 45/125401

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **4 Claims**



A deflection electrode device for an ink jet printing apparatus. A pair of vertical and a pair of horizontal deflection electrodes, the electrodes of which each have a groove for sucking ink deposited on the electrodes therein under capillary action, are disposed on the apparatus perpendicular to each other in a radial, spaced-apart arrangement about the ink stream.

3,786,517

INK JET PRINTER WITH INK SYSTEM FILTER MEANS

Konrad A. Krause, Mt. View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

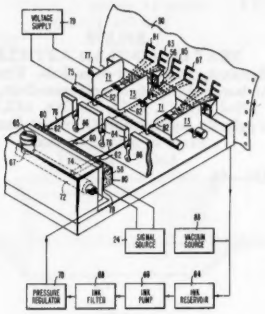
Filed Sept. 5, 1972, Ser. No. 286,380

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **11 Claims**

An ink jet printing apparatus in which a pressure generated ink stream is produced from an opening through a piezoelectric transducer which produces axial vibration when energized to produce a stream of uniform ink drops. A reference electrode is provided in electrical contact with the ink and a character designating signal is coupled between a charge elec-

trode placed adjacent the drop break-off point and the reference electrode to selectively charge individual ink drops



proportional to the character designating signals. Filter means are provided for separating the chemically active part of the ink system from the remaining part of the ink system. The effects of electrolysis and corrosion within the ink system are eliminated.

3,786,518

ELECTROSENSITIVE RECORDING MATERIALS

David Atherton, Colchester, England, assignor to NIG Mason Limited, Colchester, England

Filed Sept. 22, 1972, Ser. No. 291,165

Int. Cl. G01d *15/34*

U.S. Cl. 346—135 **4 Claims**

An electrosensitive recording material comprising a non-electrically-conducting support having a substantially uniform matt surface on which has been vapour deposited a coating, devoid of any overcoat, of a metal having the property of volatilising when contacted by an electrically energized stylus, the characteristics of the matt surface and the amount of metal deposited on the support being such that a visible image of good definition is produced upon application to the material of a stylus energized by A.C.

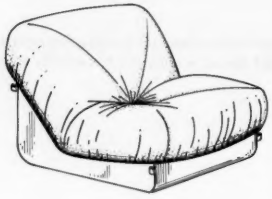
DESIGNS

JANUARY 15, 1974

229,877
SEAM RIPPER
Herman Ament, 60 Marbledale Road, Tuckahoe, N.Y. 10707
Filed Feb. 28, 1972, Ser. No. 230,187
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—19 A

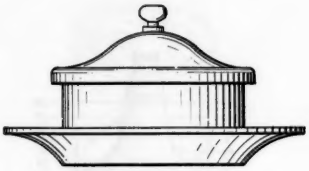
229,878
RACK FOR HANGING GARMENTS OR THE LIKE
Tomihei Saika, 116, 3-chome, Yagumo-Naka-machi, Moriguchi, Osaka, Japan
Filed Apr. 10, 1972, Ser. No. 242,893
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24

229,879
SEAT OR SIMILAR ARTICLE
Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne S.A., Montreuil-sous-Bois, France
Filed July 13, 1971, Ser. No. 162,329
Claims priority, application Germany Jan. 27, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



229,880
POLE SEAT
Ernest A. Keith, Cleveland, Ohio, assignor to Corporation (Ltd.), Cleveland, Ohio
Filed May 19, 1972, Ser. No. 255,317
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

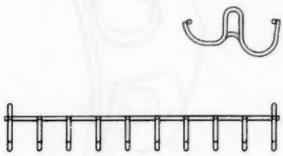
229,881
BUTTER DISH
Leon Camp Gillespie, 2714 Montana St., El Paso, Tex. 79903
Filed Feb. 11, 1972, Ser. No. 225,690
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—84



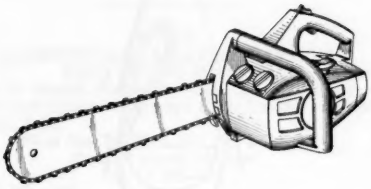
229,882
COMBINED ELECTRIC COOKING BASE AND VESSEL
George Lloveras, New York, N.Y., assignor to Cornwall Corporation, Boston, Mass.
Filed Mar. 30, 1972, Ser. No. 239,840
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94

229,883
KNIFE
James F. Pugh, Sr., 917 Carpenter St., Azle, Tex. 76020
Filed Aug. 23, 1972, Ser. No. 282,982
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—144

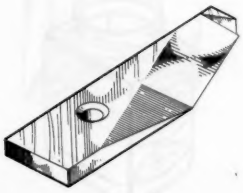
229,884
RUG-CONTACTING GRILL FOR A VACUUM CLEANER NOZZLE OR THE LIKE
Raymond H. Fineberg, Elkins Park, and Robert B. Edelson, Dresher, Pa., and Richard E. De Sisto, Salem, Mass., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.
Filed Aug. 2, 1971, Ser. No. 168,305
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—170



229,885
CHAIN SAW
Rodney L. Guthrie, St. Anne, Richard W. Condon, Frankfort, Roscoe Combs, Jr., Kankakee, and Vernon L. Krabbe, Beecher, Ill., assignors to Roper Corporation, Kanakee, Ill.
Filed Apr. 14, 1972, Ser. No. 244,326
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—65

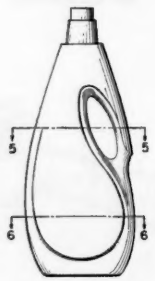


229,886
BLADE FOR WIRE STRIPPING TOOL
Walter J. Maytham, Los Altos, Calif., assignor to Speed Systems, Inc., Los Altos, Calif.
Filed July 2, 1971, Ser. No. 159,583
Term of patent 14 years
Int. Cl. D8—*99*; D15—*99*
U.S. Cl. D8—98

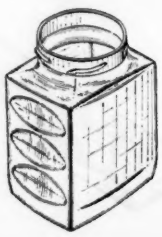


229,887
BUCKET HOOK
Ernest Roy Blood, Washington, Robert William Lichti, Oswego, and James Albert Pierson, Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 10, 1972, Ser. No. 252,160
Term of patent 14 years
Int. Cl. D8—*08*; D12—*16*
U.S. Cl. D8—232

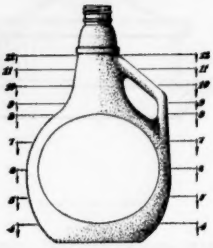
229,888
JUG
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 15, 1972, Ser. No. 289,247
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



229,889
JAR
Howard L. Brody, Westport, Conn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sept. 25, 1972, Ser. No. 292,012
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

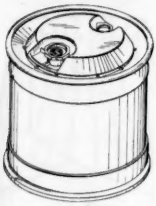


229,890
JUG
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 4, 1972, Ser. No. 223,802
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48

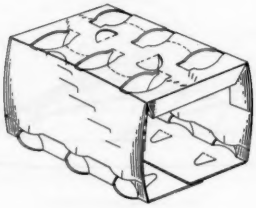


229,891
BOTTLE
Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed May 25, 1972, Ser. No. 257,064
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—160

229,892
DRUM
Robert A. Dubois, Marion, Ohio, and Elmer J. Dresher, North Babylon, N.Y., assignors to Greif Bros. Corporation, Delaware, Ohio
Filed Feb. 16, 1972, Ser. No. 227,005
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—170



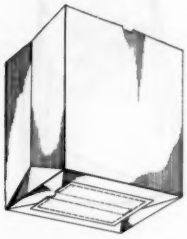
229,893
BOTTLE CARRIER
Prentice J. Wood, Jonesboro, James B. Funkhouser, Doraville, and Alfred J. Rinehart, Atlanta, Ga., assignors to The Mead Corporation
Continuation of abandoned design application Ser. No. 14,313, Nov. 5, 1968. This application Mar. 12, 1970, Ser. No. 22,717
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



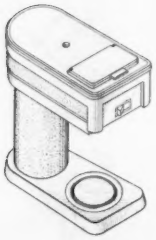
229,894
PACKAGING DISPLAY TRAY
Richard F. Reifers, New Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.
Original design application Dec. 17, 1970, Ser. No. 26,551, now Patent No. 224,735, dated Sept. 12, 1972. Divided and this application Aug. 30, 1971, Ser. No. 176,423
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—243

229,895
COMBINED CAN OPENER AND SEALABLE POUR SPOUT
Santo R. Musumeci, Allison Country Club Apartment, Apt. 404, N. Maple Shade Ave., Marlton, N.J. 08053
Filed Apr. 13, 1972, Ser. No. 243,921
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290

229,896
COMBINED BAG AND INFORMATION CONTAINING POCKET
Milton M. Bemel, Scottsdale, Ariz., assignor of a fractional part interest to Warren F. B. Lindsley, Paradise Valley, Ariz.
Filed Jan. 24, 1972, Ser. No. 220,549
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249

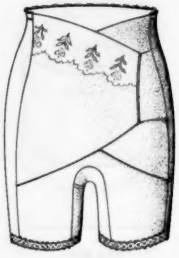


229,897
POUR-IN TYPE BEVERAGE MAKER
John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.
Filed May 8, 1972, Ser. No. 251,587
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

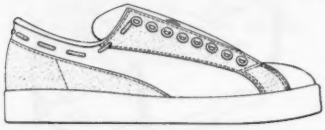


229,898
GIRDLE
Marguerite R. Williams, Trumbull, Conn., assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Dec. 6, 1971, Ser. No. 205,439
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—2

229,899
PANTY GIRDLE
Marguerite R. Williams, Trumbull, Conn., assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Dec. 6, 1971, Ser. No. 205,475
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—4



229,900
ATHLETIC SHOE
Alfred Powers, Los Angeles, Calif., assignor to Robert B. Wolf, Huntington Beach, Calif.
Filed July 17, 1972, Ser. No. 272,301
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



229,901
TIE TACK
Alexius J. Crowley, 1560 Robin, Bannockburn, Ill. 60648
Filed July 28, 1971, Ser. No. 167,081
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—419

229,902
SKEIN HOLDER
Manuel R. David, 406 W. Cuyler, Dalton, Ga. 30720
Filed July 18, 1972, Ser. No. 273,021
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 D

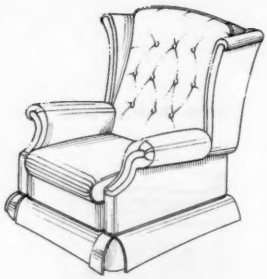
229,903
ORAL HYGIENE DEVICE
Robert C Ceniceros, 10 Hazel St., Larkspur, Calif. 94939
Filed Apr. 28, 1971, Ser. No. 138,395
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24

229,904
BRUSH
Eric Leopold Hugo Cosby, Cobham, England, assignor to G. B. Kent & Sons Limited, London, England
Filed Jan. 26, 1973, Ser. No. 326,956
Claims priority, application Great Britain Oct. 26, 1972
Term of patent 14 years
Int. Cl. D04—*02*
U.S. Cl. D4—34

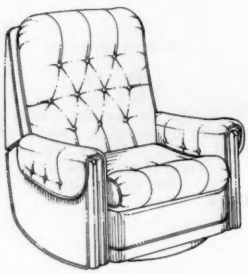
229,905
CRIB END
Robert V. Jacobs and Allen D. Jacobs, Los Angeles, Calif., assignors to Questor Corporation
Filed July 24, 1972, Ser. No. 274,349
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

229,906
CRIB END
Robert V. Jacobs, Los Angeles, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Aug. 3, 1972, Ser. No. 277,809
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

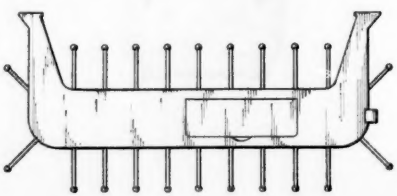
229,907
LOUNGE CHAIR
Don Ray Gill, 792 Dodge Trail, Westville, Ind. 46391
Filed June 1, 1971, Ser. No. 149,114
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39



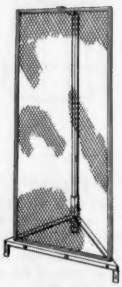
229,908
CHAIR
Eugene J. Costabile, 9216 55th Court, Oak Lawn, Ill. 60453
Filed Dec. 1, 1971, Ser. No. 203,943
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39



229,909
AUTOMATIC NECKTIE RACK, OR SIMILAR ARTICLE
Melvin A. Goldfeder, Rockville Center, N.Y., assignor to Swank, Inc., Attleboro, Mass.
Filed Sept. 14, 1972, Ser. No. 288,925
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D6—117

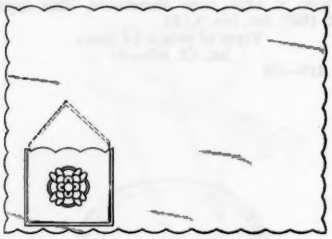


229,910
DISPLAY STAND FOR CARPET SAMPLES AND THE LIKE
Leon H. Best, Galva, and Robert D. Davis, Kewanee, Ill., assignors to John H. Best & Sons, Inc., Galva, Ill.
Filed Jan. 24, 1972, Ser. No. 220,563
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—139

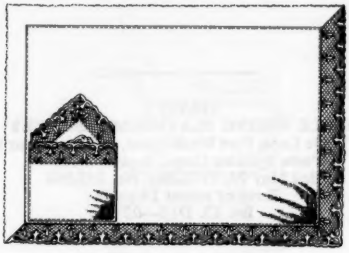


229,911
COMBINATION DESK AND RECORD FILING COMPARTMENT
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corporation, Roslyn, N.Y.
Filed May 22, 1972, Ser. No. 255,965
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161

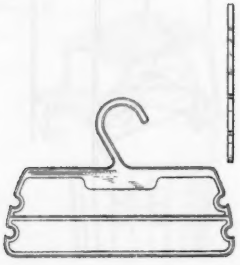
229,912
PLACE MAT
Eugenia Bradford, 5715 S. Green St., Chicago, Ill. 60621
Filed Dec. 22, 1972, Ser. No. 317,692
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271



229,913
PLACE MAT AND NAPKIN SET
Eugenia Bradford, 5715 S. Green St., Chicago, Ill. 60621
Filed Dec. 22, 1972, Ser. No. 317,695
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271

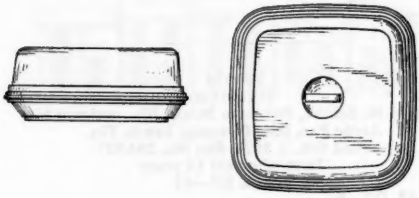


229,914
APPAREL HANGER
David H. Lindemann, 228 SW. 21st Terrace, Fort Lauderdale, Fla. 33315
Filed June 15, 1972, Ser. No. 263,193
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—255

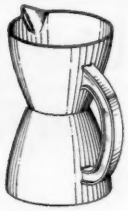


229,915
PLACE MAT
Eugenia Bradford, 5715 S. Green St., Chicago, Ill. 60621
Filed Dec. 22, 1972, Ser. No. 317,697
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271

229,916
COVERED FOOD SERVING VESSEL
Irwin Schneider, Lincolnwood, Ill., assignor to Imperial Arts Corporation, Chicago, Ill.
Filed July 28, 1971, Ser. No. 167,073
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—18

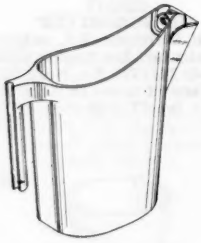


229,917
MEASURING CUP
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed July 24, 1972, Ser. No. 274,756
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D7—50

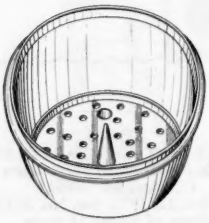


229,918
CRUET
Walter Schlessel, Lawrence, N.Y., assignor to Gemco-Ware Inc., Freeport, N.Y.
Filed Oct. 27, 1972, Ser. No. 301,286
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—54

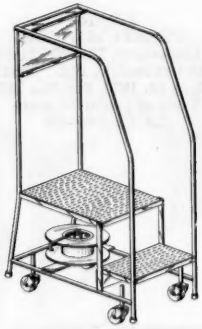
229,919
PITCHER
Justin M. Schmit, Pompano Beach, Fla., assignor to Arctic Pac, Inc., Pompano Beach, Fla.
Filed Oct. 3, 1972, Ser. No. 294,537
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64



229,920
STORAGE CONTAINER FOR LETTUCE OR THE LIKE
James B. Swett, 8 Devonshire Drive, Barrington, R.I. 02806
Continuation-in-part of design applications Ser. No. 5,003, Dec. 12, 1966, now Patent No. 212,033, dated Aug. 20, 1968 and Ser. No. 5,008, Dec. 12, 1966, both of which were divisions of design application Ser. No. 906, Feb. 3, 1966, now abandoned. This application Oct. 2, 1967, Ser. No. 9,184
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—76

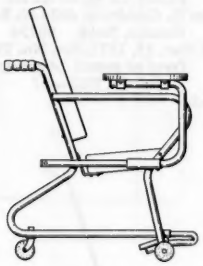


229,921
MOBILE WIRING PLATFORM ASSEMBLY
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.
Filed May 22, 1972, Ser. No. 255,966
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—59

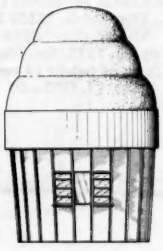


229,922
FRAME FOR CHILDREN'S BICYCLE SEAT
Morris Bishaf, 8512 N. Harding, Skokie, Ill. 60075, and Leonard Messineo, 2318 Greenfield Drive, Glenview, Ill. 60025
Filed Sept. 15, 1971, Ser. No. 180,936
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—119

229,923
WHEELCHAIR OR SIMILAR ARTICLE
Morton I. Thomas, 125 South St., Monroe, N.Y. 10950
Filed May 28, 1971, Ser. No. 148,276
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D12—131



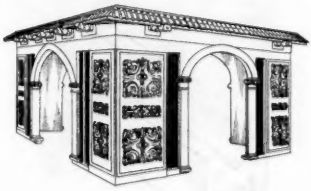
229,924
BUILDING
C. Douglas Brown, P.O. Box 1579, Panama City, Fla. 32401
Filed Dec. 11, 1970, Ser. No. 26,411
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 F



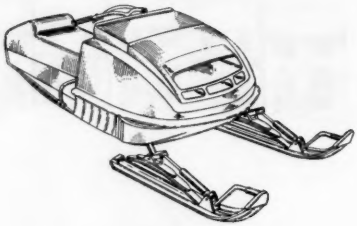
229,925
TOWNHOUSE COMPLEX
Myron Stuart Hurwitz, 4420 Forest Glen Court, Annandale, Va. 22003
Filed June 10, 1971, Ser. No. 152,020
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A

229,926
TOWNHOUSE COMPLEX
Myron Stuart Hurwitz, 4420 Forest Glen Court, Annandale, Va. 22003
Filed June 10, 1971, Ser. No. 152,021
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A

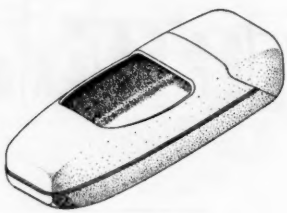
229,927
BUILDING
Donald C. Gist, 8650 SW. 67th Ave., Apt. 1039, Miami, Fla. 33143
Filed Dec. 23, 1971, Ser. No. 211,824
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



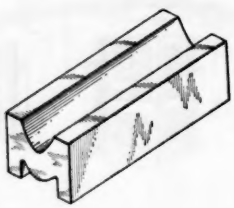
229,928
SNOWMOBILE
Y. Anselme Lapointe and Thomas Scott, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,161
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



229,929
SNOWMOBILE AMBULANCE BODY
David R. Haskins, Tomahawk, Wis., assignor to Lake Nokomis Enterprises, Inc., Tomahawk, Wis.
Filed Feb. 28, 1972, Ser. No. 230,181
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



229,930
MASONRY BLOCK CONSTRUCTION
Alfred A. Hala, 28 Meeks Lane, Islip, N.Y. 11751
Filed Dec. 16, 1971, Ser. No. 209,009
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R

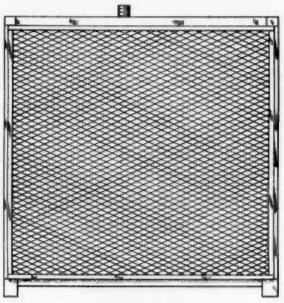


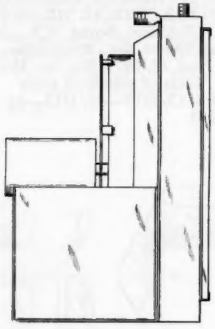
229,931
SOLUTION FEEDER
Dennis G. Winberg, South Cottage Grove, Minn., assignor to Ecodyne Corporation
Filed Sept. 30, 1971, Ser. No. 185,466
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

229,932
WATER SWEEPER FOR FLOORS OR SIMILAR PLANAR SURFACES
Charles E. Goodrich, 4024 N. 94th St., Omaha, Nebr. 68134
Filed Nov. 15, 1971, Ser. No. 199,093
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

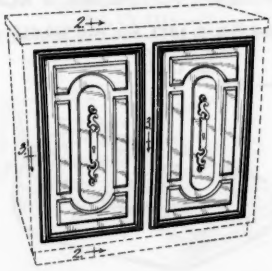
229,933
FLEXIBLE FISHING LURE
Donald L. Fitzpatrick, 12350 SW. 8th St., Miami, Fla. 33144
Filed Jan. 20, 1972, Ser. No. 219,612
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

229,934
HEAT EXCHANGER
Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.
Filed May 9, 1972, Ser. No. 251,860
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72

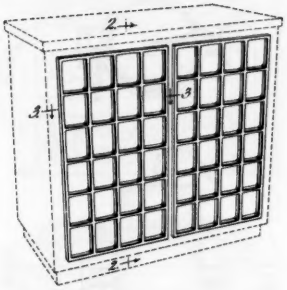




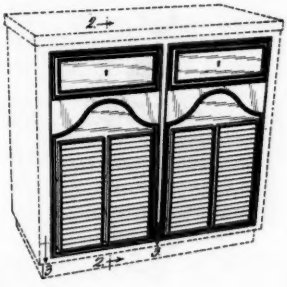
229,935
FACADE FOR ELECTRIC HUMIDIFIER
Jack B. Schmitt, West Los Angeles, Calif., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 5, 1972, Ser. No. 268,956
Term of patent 14 years
Int. Cl. D23—*04;* D06—*04*
U.S. Cl. D23—146



229,936
FACADE FOR ELECTRIC HUMIDIFIER
Jack B. Schmitt, West Los Angeles, Calif., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 5, 1972, Ser. No. 268,957
Term of patent 14 years
Int. Cl. D23—*04;* D06—*04*
U.S. Cl. D23—146

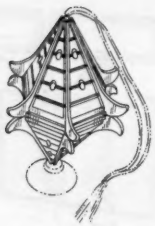


229,937
FACADE FOR AN ELECTRIC HUMIDIFIER
Jack B. Schmitt, West Los Angeles, Calif., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 5, 1972, Ser. No. 268,958
Term of patent 14 years
Int. Cl. D23—*04;* D06—*04*
U.S. Cl. D23—146

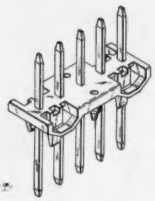


229,938
FORELINE MOLECULAR TRAP FOR A VACUUM SYSTEM
Gerald J. Pisano, Santa Clara, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Oct. 13, 1971, Ser. No. 189,078
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149

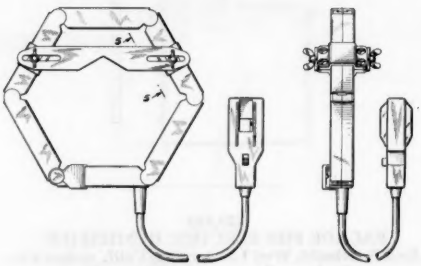
229,939
VENTILATED CONTAINER FOR AIR FRESHENER
Frank J. Curran, 3250 S. Highland Ave. Downers Grove, Ill. 60515
Filed Mar. 10, 1972, Ser. No. 233,863
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



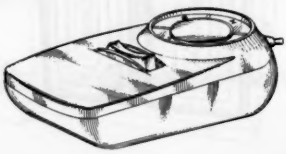
229,940
INSULATED CONNECTOR
Norimitsu Irie, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 18, 1971, Ser. No. 189,855
Claims priority, application Japan Apr. 27, 1971
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



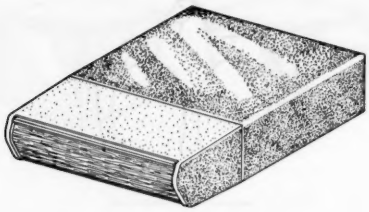
229,941
ADJUSTABLE STEP-DOWN TRANSFORMER FOR USE IN ELECTRICAL MEASURING
Raymond J. Feldman, Bronx, N.Y., assignor to SOS Consolidated, Inc., Birmingham, Mich.
Filed Nov. 17, 1971, Ser. No. 199,830
Term of patent 14 years
Int. Cl. D10—*05;* D13—*02*
U.S. Cl. D26—1 Q



229,942
CONTROL UNIT FOR AN ANTENNA ROTATOR
Raymond Kaysen, Glenside, Pa., and Franklin Roosevelt Di Meo, Woodbury, N.J., assignors to RCA Corporation
Filed Feb. 5, 1973, Ser. No. 329,611
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

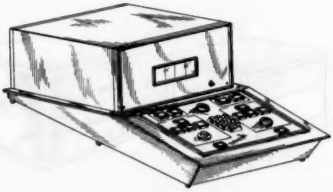


229,943
TAPE PLAYER OR SIMILAR ARTICLE
Marcus M. Artner, Chicago, and Paul D. McGee, Medinah, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 28, 1972, Ser. No. 230,203
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14 B

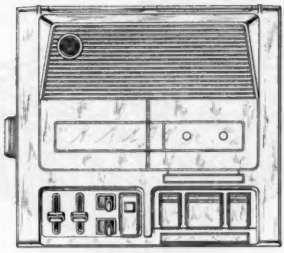


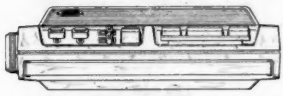
229,944
TELEPHONE RECEIVER HOLDER
Dorothy I. Eddy, 7141 Country Club Lane, Kansas City, Mo. 64114
Filed Dec. 13, 1971, Ser. No. 207,713
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

229,945
ELECTRICAL SWITCHING CONSOLE
Vincent F. Santulli, Manhassett, and Paul V. De Luca, Port Washington, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed June 12, 1972, Ser. No. 262,138
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

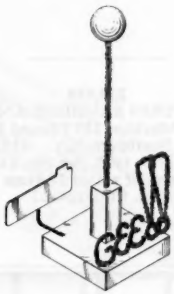


229,946
CASSETTE TAPE RECORDER
Reynolds B. Winslow, Syracuse, N.Y., assignor to General Electric Company
Filed Dec. 18, 1972, Ser. No. 315,919
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

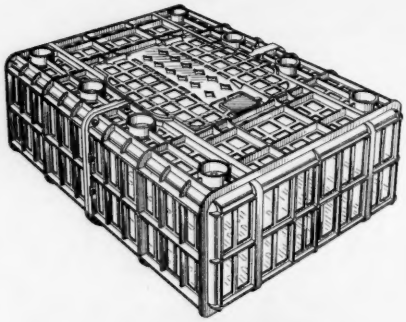




229,947
PLACE CARD FAVOR
Henry Haenelt, Coquitlam, British Columbia, Canada, assignor to David R. N. Herd, Coquitlam, British Columbia, Canada
Filed May 15, 1972, Ser. No. 253,696
Claims priority, application Canada Mar. 30, 1972
Term of patent 14 years
Int. Cl. D11—*02;* D20—*03*
U.S. Cl. D29—23 A



229,948
POULTRY TRANSPORT CASE
Theodor M. Box, 1108 Aileen Road, Brielle, N.J. 08730
Filed Apr. 20, 1972, Ser. No. 246,100
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

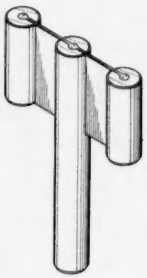


229,949
PUPPET
Russell B. Odell, 219 Walter Court, Elgin, Ill. 60121
Filed Sept. 11, 1972, Ser. No. 288,144
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

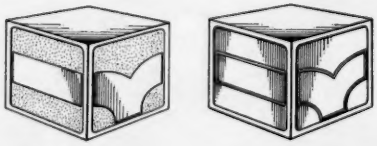
229,950
COMBINATION SANDBOX AND POOL
Walter Mitchko, 337 Elwood Road, East Northport, N.Y. 11731
Filed May 6, 1971, Ser. No. 141,100
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 F

229,951
GAME HORSESHOE
Charles D. Poole, 3311 Dumas Drive, Nashville, Tenn. 37211
Filed June 13, 1972, Ser. No. 262,264
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP

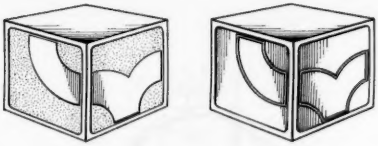
229,952
NOISEMAKER TOY
Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 22, 1972, Ser. No. 228,480
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15 C



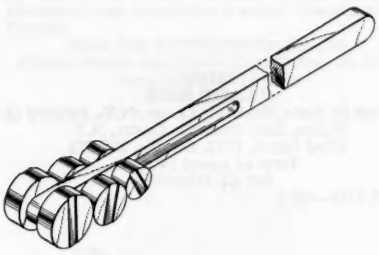
229,953
TOY BUILDING BLOCK
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed June 5, 1972, Ser. No. 259,417
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 FF



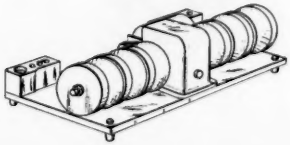
229,954
TOY BUILDING BLOCK
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed June 5, 1972, Ser. No. 260,030
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 FF



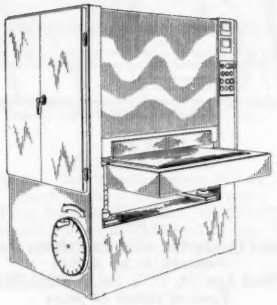
229,955
ROLLING TOY
Jorma Vennola, Princeton, and Erkki Pekka Korpijaakko, Heightstown, N.J., assignors to Columbia Broadcasting System, Inc.
Filed July 12, 1972, Ser. No. 270,984
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



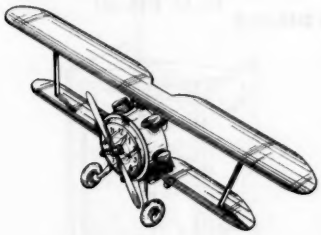
229,956
STONE POLISHING MACHINE
Robert A. Snyder, 1701 Harkness St., Manhattan Beach, Calif. 90266
Filed Sept. 30, 1971, Ser. No. 185,475
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 A



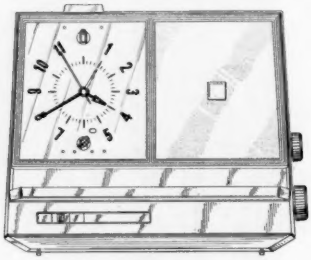
229,957
WIDE BELT SANDING MACHINE
Gordon L. Schuster, Minneapolis, and Cecil D. Brotherton, Coon Rapids, Minn., assignors to Timesavers, Inc.
Filed Nov. 16, 1972, Ser. No. 307,047
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 A



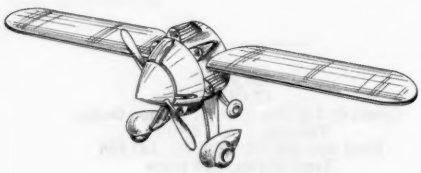
229,958
CLOCK
Creath Q. Linville, 6501 La Paloma Oeste, Phoenix, Ariz. 85014
Filed Apr. 10, 1972, Ser. No. 242,886
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 D



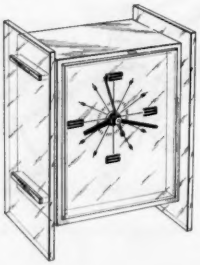
229,959
CLOCK RADIO
Cornelius W. Christie, Jr., Fulton, N.Y., assignor to General Electric Company
Filed May 15, 1972, Ser. No. 253,675
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



229,960
CLOCK
Creath Q. Linville, 6501 La Paloma Oeste, Phoenix, Ariz. 85014
Filed Apr. 10, 1972, Ser. No. 242,884
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 D

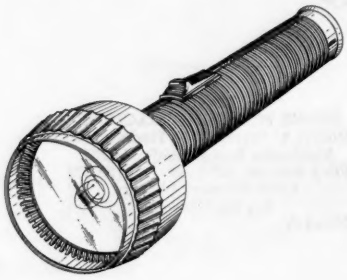


229,961
CLOCK OR SIMILAR ARTICLE
Arthur M. Felske, Westport, Conn., assignor to General Electric Company
Filed May 3, 1972, Ser. No. 250,101
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



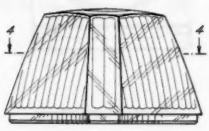
229,962
BRACELET OR SIMILAR ARTICLE
Andrew Mitchell David, 107 Wythe Crescent Drive, Hampton, Va. 23361
Filed Aug. 7, 1972, Ser. No. 278,363
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 C

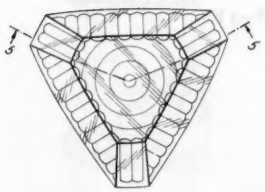
229,963
FLASHLIGHT
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed July 3, 1972, Ser. No. 268,578
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



229,964
CIGARETTE LIGHTER
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 248,338
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

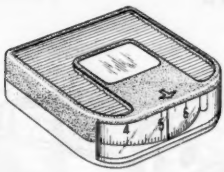
229,965
LAMP LENS
John Smith, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed Feb. 4, 1972, Ser. No. 223,814
Claims priority, application Canada Aug. 20, 1971
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A





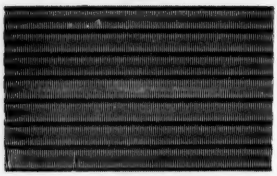
229,966
CIGARETTE LIGHTER
John C. Lockwood, Atlanta, Ga., assignor to Scripto Inc., Atlanta, Ga.
Filed Apr. 28, 1972, Ser. No. 248,801
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

229,967
TAPE MEASURE
Michael Quenot, Trepillot-Besancon, France, assignor to Stanley Mabo, Besancon, France
Filed Aug. 10, 1972, Ser. No. 279,491
Claims priority, application France Apr. 7, 1972
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—1 R

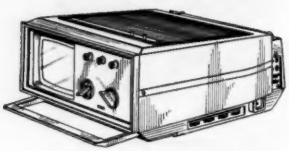


229,968
NOISE METER
Roger F. Williams, Los Altos Hills, Calif., assignor to Pulsar Instruments, Inc., Redwood City, Calif.
Filed Oct. 13, 1971, Ser. No. 188,819
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

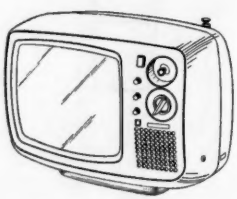
229,969
EXPANDED METAL SHEET
Eugene Kattler, Trumbull, and Kenneth Mackenzie, Newtown, Conn., assignors to Exmet Corporation
Filed Sept. 29, 1971, Ser. No. 184,970
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 B



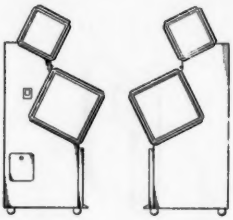
229,970
TELEVISION RECEIVER
Osamu Sugihara, Yasunobu Nakamura, Minoru Ando, Tadahiko Tokuda, and Tomio Tanaka, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 17, 1971, Ser. No. 209,500
Claims priority, application Japan June 18, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



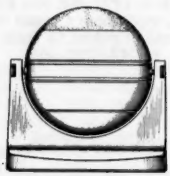
229,971
TELEVISION RECEIVER
Tadahiko Tokuda Kenichiro Ito, and Yasunobu Nakamura, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 17, 1971, Ser. No. 209,494
Claims priority, application Japan June 18, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



229,972
JUKEBOX
Walter Herbst, Evanston, Ill., assignor to NSM Apparatebau G.m.b.H. Kommanditgesellschaft, Bingen (Rhine), West Germany
Filed May 19, 1972, Ser. No. 255,315
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



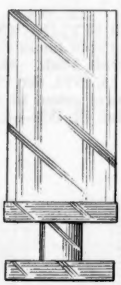
229,973
PORTABLE AM RADIO
John T. Houlihan, Manlius, N.Y., assignor to General Electric Company
Filed May 1, 1972, Ser. No. 249,480
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



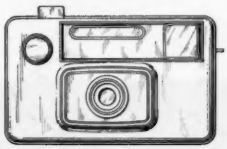
229,974
SPECTACLES
Max F. Wichers, Topeka, Kans., assignor to Galaxy Optical Manufacturing Company, Inc., Topeka, Kans.
Filed Sept. 7, 1971, Ser. No. 178,532
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

229,975
COMBINED SPECTACLES AND LAMPS THEREFOR
Julius Klugmann, 461 Fort Washington Ave., Apt. 26, New York, N.Y. 10033
Filed Mar. 24, 1972, Ser. No. 238,006
Term of patent 14 years
Int. Cl. D26—*02;* D16—*06*
U.S. Cl. D57—1 F

229,976
EYEGLASS HOLDER
Millicent Zahn, Birchwood Lane, Kings Point, N.Y. 11024
Filed May 5, 1972, Ser. No. 250,864
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 C



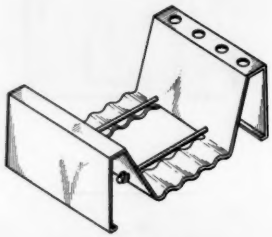
229,977
CAMERA OR SIMILAR ARTICLE
Masakazu Nakanishi, Sakai, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan
Filed Jan. 24, 1972, Ser. No. 220,546
Claims priority, application Japan Aug. 20, 1971
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



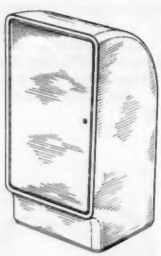
229,978
FONT OF LETTERS
Gerald Herman Hantusch, Kanata, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada
Filed Dec. 13, 1971, Ser. No. 207,703
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

229,979
SCUPPER FOR CONCRETE HULLS
Donald O. Taylor, 4204 Reinhardt Drive, Oakland, Calif. 94619
Filed Jan. 17, 1972, Ser. No. 218,662
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 S

229,980
CARD FILE
Moritoshi Kimura, 34–7, 2-chome, Higashi Mukojima, Sumida-ku, Tokyo, Japan
Filed Apr. 27, 1971, Ser. No. 138,008
Claims priority, application Japan Dec. 31, 1970
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A

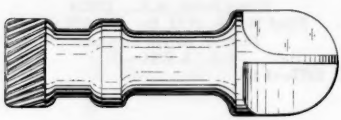


229,981
POST DROP BOX
Gerald J. Adamson, Scarborough, Ontario, and Jan W. Kuypers and Ian F. Norton, Toronto, Ontario, Canada, assignors to Don Mills Developments Limited, Toronto, Ontario, Canada
Filed Nov. 11, 1971, Ser. No. 198,088
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9

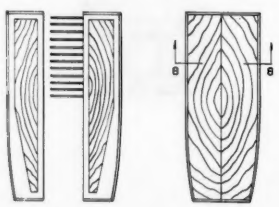


229,982
ASHTRAY
August D. Leopold, Jr., 51 Colonial Club Drive, New Orleans, La. 70123
Filed Dec. 6, 1971, Ser. No. 205,472
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H

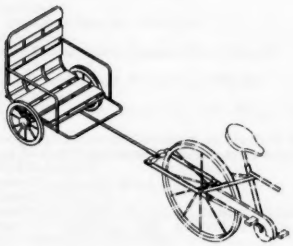
229,983
PIPE REAMER AND TAMPER
James E. Bernard, Stilwell, Kans., assignor to Richard W. Whitlaw, Milbank, S. Dak.
Filed Feb. 7, 1972, Ser. No. 224,405
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D85—7 D



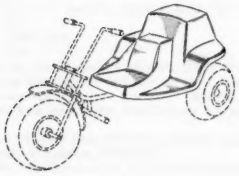
229,984
HAIR STYLING COMB
Paul E. Brooks, 17140 James Couzens Freeway, Detroit, Mich. 48235
Filed Jan. 15, 1971, Ser. No. 106,939
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

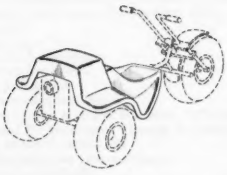


229,985
TRAILER FOR A BICYCLE OR THE LIKE
Harry W. Trevena, 3974 Payne Ave., San Jose, Calif. 95117
Filed May 19, 1971, Ser. No. 145,115
Term of patent 14 years
Int. Cl. D12—*10, 11*
U.S. Cl. D90—1

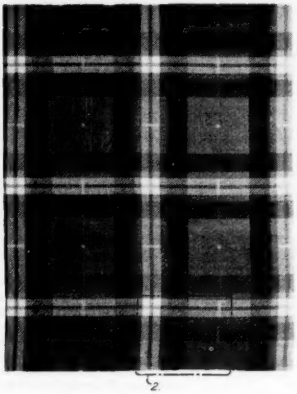


229,986
VEHICLE BODY
Harvey L. Widgren, 1044 S. Grevillea, Inglewood, Calif. 90301, and Paul E. Adams, 10320 Rossbury Place, Los Angeles, Calif. 90064
Filed Sept. 30, 1971, Ser. No. 185,486
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—8 A

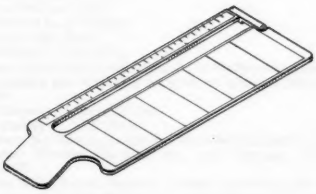




229,987
PLAID TEXTILE FABRIC
Robert F. O'Brien, 1452 Glenlake Drive 46614, and Francis S. Amussen, 1657 N. Brookfield 46628, both of South Bend, Ind.
Filed Oct. 20, 1971, Ser. No. 191,150
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 AA



229,988
FRAME FOR MAKING FRINGE
Cedric C. Sovia, 319 S. Lake St., Forest Lake, Minn. 55025
Filed Oct. 19, 1972, Ser. No. 300,585
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



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TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JANUARY, 1974

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Basse, Paul-Werner, to Siemens Aktiengesellschaft. Circuit arrangement of MOS transistors operating according to the dynamic principle for decoding the addresses for an MOS memory. 3,786,277, Cl. 307-238.000.

Batcher, Kenneth E.; and Franks, John T., Jr., to Goodyear Aerospace Corporation. Multiple access plated wire memory. 3,786,448, Cl. 340-174.0pw.

Bates, John Joseph; Jackson, Eric Arthur; and Smith, Gordon, to Coal Industry (Patents) Limited. Recording apparatus. 3,786,511, Cl. 346-33.000.

Batter, John F., Jr.; Mason, Paul B.; Stella, Joseph A.; Thomas, Paul W., Jr.; and Wright, Joseph H., to Polaroid Corporation. Processing composition release mechanism for film cassette comprising self-contained film processing system. 3,785,725, Cl. 352-7.000.

Bauer, Adola; Weber, Karl-Heinz; Danneberg, Peter; and Minck, Kalus, to Boehringer Ingelheim G.m.b.H. 1-(Phenyl or pyridyl)-1,3-dihydro-2H-1, 4-benzodiazepin-2-ones. 3,786,051, Cl. 260-239.30d.

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Bazin, Lucas John, to RCA Corporation. Apparatus for automatic color balancing of television camera signals. 3,786,177, Cl. 178-5.4bt.

Beard, William A. Wax composition. 3,785,841, Cl. 106-186.000.

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Beck, William A., to Beck, Inc. Automatic shoe polisher. 3,784,997, Cl. 15-31.000.

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Bergbauer, Axel; Ploger, Manfred; and Seyd, Gunther, to Siemens Aktiengeselischaft. Device for closing off defective heat exchanger tubes. 3,785,291, Cl. 102-24.00r.
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Bergfried, Dietrich E., to Weinschel Engineering Company, Inc. Variable resistive film attenuator. 3,786,374, Cl. 333-81.00a.
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Bianco, Eitore. Automatic device for signaling frogman accidents. 3,786,406, Cl. 340-5.00r.
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Bohrer, Thomas Carl; Ecker, George Franklin; and Chen, David Hsiao Tsung, to Celanese Corporation. Hot stepwise drawing with independent free-wheeling idler rolls. 3,785,018, Cl. 28-71.300.

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Bouchet, Claude; and Ziliotto, Vittorio, to International Standard Electric Corporation. Electronic scanner checking process and system. 3,786,431, Cl. 340-172.500.

Bourgeois, Michel; and Le Havre, Pierre Jean, to Gaz Transport, S.A.R.L. Integral tank for transporting liquefied gas. 3,785,320, Cl. 114-74.00a.

Bowen, Rafael L., to United States of America, Health, Education, and Welfare. Dental primer varnish. 3,785,832, Cl. 106-35.000.

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Bowman, Melvin G.; and Vier, Dwayne T. Gas mixture for forming protective coatings on graphite. 3,785,994, Cl. 252-372.000.

Boyd, David M.; and Greenwood, Arthur R., to Universal Oil Products Company. Uniform solids withdrawal system. 3,785,963, Cl. 208-171.000.

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Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, to Western Electric Company, Incorporated. Loading of compliant tape. 3,785,903, Cl. 156-356.000.

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Bradley, Wilson E., Jr.; and Schinner, Edward N., to Baltimore Aircoil Company, Inc. Control system for injection cooling towers. 3,785,626, Cl. 261-36.00r.

Brajkovich, William D. Motorcycle carrier and chock. 3,785,517, Cl. 214-450.000.

Brand, Wilhelm, to Berstorff, Hermann, Maschinenbau GmbH. Apparatus to control feed of material to an extruder. 3,785,527, Cl. 222-56.000.

Brandenburg, Frank J., Jr. Radiant heater. 3,786,230, Cl. 219-345.000.

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Bratoljic, Tihomir; Waldis, Josef; and Zimmermann, Max, to Aktiengesellschaft Brown, Boveri & Cie. Combined emergency switch-off and control rod drive for control rod of a gas-cooled nuclear reactor. 3,785,923, Cl. 176-36.00r.

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Bretschneider, Walter, to Continental Gummi-Werke Aktiengesellschaft. Inner sole for sandals. 3,785,068, Cl. 36-11.500.

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Bridges, Robert M., to Bendix Corporation, The. Cable termination. 3,786,397, Cl. 339-92.00m.

Bridgestone Tire Company Limited: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

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Price, David Watkin; Sidebottom, Ronald; Briscoe, Murray George; and Moore, Ronald Charles, 3,786,011.

British Aircraft Corporation: *See—*
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British Oxygen Co., Ltd., The: *See—*
Baker, Malcolm Arthur, 3,786,130.

Britt, Le Roy A. Tractor canopy sprinkler system. 3,785,439, Cl. 169-2.00a.

Brooker, Leslie G. S.: *See—*
Fumia, Arthur, Jr.; and Brooker, Leslie G. S., 3,786,046.

Brooks, Herbert B. Process control simulator. 3,786,242, Cl. 235-184.000.

Brown, Boveri & Cie AG: *See—*
Schmitt, Volker; and Valten, Walter, 3,786,381.

Brown, Boveri & Company, Limited: *See—*
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Brown, Caroll J.; Chesarek, Donald J.; Fisk, Dale E.; Ma, Joseph T.; Martin, Harold F.; and Reynolds, Zack D., to International Business Machines Corporation. Video display system. 3,786,479, Cl. 340-324.0ad.

Brown, Donald R.; Masopust, Otto I., Jr.; and Stoltz, James F., to Western Electric Company Incorporated. Unitary wound resistor-capacitor network. 3,786,322, Cl. 317-256.000.

Brown, John William. Footwear. 3,785,069, Cl. 36-44.000.

Brown, Robert C., Jr.: *See—*
Davidson, William Ward, Jr., 3,785,289.

Brown, Willard D. Apparatus for determining the unit valve of a line of type characters. 3,785,553, Cl. 235-80.000.

Browner, Richard F.; Winefordner, James D.; and Glenn, Tom H.; deceased (by Glenn, Mary T.; heir), said Browner and said Winefordner assors. to Board of Regents. Temperature stabilized spectral source. 3,786,308, Cl. 315-248.000.

Bruker-Physik AG: *See—*
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Brumfield, Robert C. Filtering blood sucker. 3,785,380, Cl. 128-276.000.

Brundage, R. Pauline; and Lesher, George Y., to Sterling Drug, Inc. 7-Methyl-4-chloro(or-4-lower-alkoxy)-1,8 -naphtayridine-3-carboxylates. 3,786,043, Cl. 260-295.50b.

Brunswick Corporation: *See—*
Kloiber, Robert F., 3,785,328.
Niemi, Arvi E.; and Marecek, John R., 3,785,001.

Bryant, Cameron C. Wellpoint system. 3,785,750, Cl. 417-211.500.

Bryant, Delores. Article of clothing including a combined belt and suspender arrangement. 3,784,987, Cl. 2-310.000.

Bryant, Richard W.: *See—*
Alexander, Stephen B.; Bryant, Richard W.; Lipp, Robert J.; and Tu, George K., 3,786,442.

Bryson, Miliard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., to Gulf Research & Development Company. Process for cracking hydrocarbons containing residual oil. 3,785,959, Cl. 208-120.000.

Brzezinski, Janusz. Digital readout instrument employing enablement circuits for system when under reading conditions. 3,785,207, Cl. 73-362.0ar.

Brzozowski, Zhigniew; Kusmierek, Jadwiga; and Porljko, Stanislaw, to Politechnika Warszawska. Fire protection paints. 3,786,019, Cl. 260-37.0ep.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. Substituted O-carbamylhydroxamate insecticides. 3,786,158, Cl. 424-327.000.

Buchel, Karl-Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. Combatting arthropods with phenylhydrazones of 1,2-dicarbonyl compounds. 3,786,131, Cl. 424-304.000.

Bucheler, Manfred: *See—*
Molls, Hans-Heinz; Hornle, Reinhold; Bucheler, Manfred; Raab, Hans; and Adrio, Joachim, 3,785,969.

Bucholtz, Glen E., to Globe Tool and Engineering Company, The. Wire lead cutter for armature winding machine. 3,785,034, Cl. 29-205.00c.

Buckbee-Mears Company: *See—*
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Buckeye Steel Castings: *See—*
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Budyko, Jury Ivanovich: *See—*
Borisov, Jury Modestovich; Budyko, Jury Ivanovich; Dubnitsky, Nikolai Borisovich; Koganer, Valentin Eizerovich; Lisitsyn, Alexandr Ivanovich; Mozokhin, Nikolai Gavrilovich; Maskenskov, Konstantin Mikhailovich; and Dukhnin, Jury Vasilievich, 3,785,353.

Buehring, Arnold. Foot rest. 3,785,702, Cl. 297-439.000.

Buendia, Jean: *See—*
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Martel, Jacques; and Buendia, Jean, 3,786,070.

Buettner, Egon: *See—*
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Bumpus, Ward H.; and Brehm, Justin, to Fasco Industries, Inc. Infrared heater and ventilator unit. 3,786,233, Cl. 219-343.000.

Bunker Ramo Corporation: *See—*
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Bures, Ladislav: *See—*
Rajnoha, Jaroslav; Bures, Ladislav; and Orlici, Usti Nad, 3,785,138.

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Burlington Industries, Inc.: *See—*
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Burnham, Walter J.: *See—*
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Burstein, Norman; and Ditzler, Richard C., to Smokontrol Corporation of America. Smoke eliminating device. 3,785,778, Cl. 23-288.00f.

Burton, Joe M.: *See—*
Shaver, Robert G.; and Burton, Joe M., 3,785,888.

Bury, Allen J., to Molex, Incorporated. Snap switch with pre-wired terminals. 3,786,209, Cl. 200-67.00c.

Busch, Ernst-Werner: *See—*
Moyer-Bertenrath, Jurgen; Kaffarnik, Hans; Rey, Hans-Georg; Michal, Gerhard; and Busch, Ernst-Werner, 3,786,140.

Bush, Jack A., to Republic Industrial Corporation. Seal. 3,785,660, Cl. 277-134.000.

Busler, Willard Leroy; Ross, Milton Dean; and Schwartzer, Thomas Edward, to AMP Incorporated. Insertion of liners into holes in printed circuit boards. 3,785,035, Cl. 29-203.00b.

Butterfield, Max L.; Windish, Willis L.; and Coker, Morton M., to Caterpillar Tractor Company. Boom control mechanism for tractors or the like. 3,785,503, Cl. 212-8.00b.

Buttner, Gert: *See—*
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Button, David, to UCC Hydraulics, Limited. Air breather assembly. 3,785,401, Cl. 137-493.200.

Butzko, Robert L. Universal thermoplastic sheet forming apparatus. 3,785,762, Cl. 425-398.000.

B.V. Maschinefabrik en Ijzergisterij Holland Bergen op Zoom: *See—*
Visser, Jan Cornelis, 3,785,338.

Byam, Peter M., to Fasco Industries, Inc. Sequentially actuated pressure switches having separate resistor elements associated with each. 3,786,210, Cl. 200-81.400.

Byland, Hans: *See—*
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Cairns, Hugh; Chambers, Albert; and Lee, Thomas Brian, to Fisons Limited. Chemical compounds chromone-2-carboxylic acids. 3,786,071, Cl. 260-345.200.

Caldwell, Samuel I.; Cheek, Michael E.; and Cline, Lawrence R., to Caterpillar Tractor Company. Lubrication system for a gear drive mechanism. 3,785,458, Cl. 184-6.120.

Calkins Manufacturing Company: *See—*
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Calkins, Oscar O., to Calkins Manufacturing Company. Boat support for trailers. 3,785,677, Cl. 280-414.00r.

Cambridge Memories, Inc.: *See—*
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Spain, Robert J., 3,786,451.

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Camenzind, Hans R., to Pacific Plantronics, Inc. Amplifier for use in communication systems. 3,786,200, Cl. 179-81.00b.

Canepa, William P., to Kay-Cee Industrial Products, Inc. Adhesive slide fastener product. 3,785,014, Cl. 24-205.16r.

Canning, Glenn R. Pilfer-proof merchandise card holding device. 3,785,501, Cl. 211-7.000.

Canon Camera Kabushiki Kaisha: *See—*
Inoue, Eiichi; Shimizu, Isamu; Endo, Ichiro; and Kobayashi, Hajime, 3,785,820.

Canon Kabushiki Kaisha: *See—*
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Caperton, George H., Jr. KE-easel. 3,785,299, Cl. 108-11.000.

Capriotti, John J. Parking indicators for automobiles. 3,786,412, Cl. 340-54.000.

Carbonnel, Henri, to Groupement Atomique Alsacienne Atlantique Plessis Robinson. Conduction pump for corrosive liquid metals. 3,785,744, Cl. 417-50.000.

Cardinal Instrument Corporation: *See—*
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Cardone, Michele; Grandini, Angelo; and Zaramella, Bruno. Magnetic anchoring device for graphic arts. 3,786,386, Cl. 335-295.000.
Cardwell Westinghouse Company: *See—*
Peterson, Bertil E.; and Housman, Richard J., 3,785,679.
Carleton, James T., to Westinghouse Electric Corporation. Digital integration apparatus and method. 3,786,491, Cl. 340-347.0nt.
Carleton, James T., to Westinghouse Electric Corporation. Compensation apparatus and method. 3,786,492, Cl. 340-347.0cc.
Carlsmith, Lawrence A.; Mallory, William L.; and Perkins, Joseph K., to Improved Machinery, Inc. Apparatus for the gaseous reaction of material. 3,785,577, Cl. 241-57.000.
Carlson, Carl O., to National Cash Register Company, The. Scheme for mapping mechanical translation to a relatively arbitrary index table. 3,786,417, Cl. 340-147.00r.
Carlson, Gordon A., to PPG Industries, Inc. Process for the recovery of mercury from waste solids. 3,785,942, Cl. 204-99.000.
Carnahan, Robert D.: *See—*
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Carrier Corporation: *See—*
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Carroll, Douglas V.; and Attia, Ramsis I., to TMC (Canada) Limited. Magnetic compass or like indicating instrument. 3,785,061, Cl. 33-364.000.
Carson, John William: *See—*
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Carter, Clarence F., to Carter Engineering Company. Method and apparatus for vacuum filling open mouth bags. 3,785,410, Cl. 141-10.000.
Carter Engineering Company: *See—*
Carter, Clarence F., 3,785,410.
Carter, James C.: *See—*
Coad, George L.; and Carter, James C., 3,785,462.
Cartmell, James H.: *See—*
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Cartmell, Robert R., to Standard Oil Company. Catalytic petroleum conversion apparatus. 3,785,782, Cl. 23-288.500.
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Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
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Cassidy, John Edward: *See—*
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Castellana, Frank S.; Liker, Jack; and Kokolis, Steve, to Roesch, Karl, Inc. Electric soldering iron tip. 3,786,228, Cl. 219-233.000.
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Castor, Gary E.; and DeGain, William J., to United States of America, Navy. Bomb fin shock absorber assembly. 3,785,290, Cl. 102-4.000.
Castrucci, Paul P.; Grochowski, Edward G.; Hess, Martin S.; Maheras, Geroge; and North, William D., to International Business Machines Corporation. Semiconductor device fabrication utilizing (100) oriented substrate material. 3,785,886, Cl. 148-175.000.
Caterpillar Tractor Company: *See—*
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Celanese Corporation: *See—*
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Centre National de Recherches Metallurgiques: *See—*
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Ceramic Finishing Company: *See—*
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Chambers, Marian W. Astrological board game apparatus. 3,785,654, Cl. 273-134.00c.
Chambon, Louis Jean, to Societe d'Etudes de Machines Speciales S.A. Damping device for rotary offset press. 3,785,285, Cl. 101-148.000.
Chandler Evans, Inc.: *See—*
Popp, Roger C., 3,786,211.
Chandler, Roger E., to Esso Research and Engineering Company. Process for forming monocarboxylic acid. 3,786,077, Cl. 260-408.000.
Chapin, Jay C., to Ventron Corporation. Method for improving the fire resistance of nylon and polyester fabrics. 3,785,858, Cl. 117-136.000.
Chapman, Trevor; Schwarze, Werner; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Propionamido triazine. 3,786,053, Cl. 260-249.800.
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Chemical Additives Company: *See—*
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Chemical Construction Corporation: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
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Chevalez, Roger A.: *See—*
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Chichester-Miles, Ian, to Hawker Siddeley Aviation, Limited. Improvements in or relating to aircraft controls. 3,785,596, Cl. 244-84.00r.
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Chimenti, Robert J. L.; and Rabinowitz, Paul. Super radiant laser illuminator and image amplifier. 3,786,366, Cl. 331-94.500.
Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D., to GTE Sylvania Incorporated. Process for producing lamps. 3,785,019, Cl. 29-25.130.
Chlu, Shiu-Tang, to Quebec Iron & Titanium Corporation. Titanium carbide preparation. 3,786,133, Cl. 423-440.000.
Chow, Woo Foung, to Bell Telephone Laboratories, Incorporated. Shift circuits with output control gated by combined control memory. 3,786,192, Cl. 179-15.0aq.
Chramiec, Mark A.; and Konrad, William L., to Raytheon Company. System for low-frequency transmission of radiant energy. 3,786,405, Cl. 340-3.00r.
Christakos, Nicolaos C. Rifle. 3,785,243, Cl. 89-149.000.
Christopher, James E. Live poultry catcher. 3,785,349, Cl. 119-82.000.
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Ogawa, Haruki; Yamamoto, Akihiro; Sugawara, Yutaka; Suzuki, Shigeo; and Takagaki, Yoshio, 3,786,141.
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., to Gulf Research & Development Company. Oxidative sweetening of hydrocarbon with nitrogen containing compound and with a calcined copper-iron catalyst. 3,785,964, Cl. 208-191.000.
Cianciolo, Alfred D.; Sabatine, Donald J.; Scruggs, James A.; and Trotz, Samuel I., to Olin Corporation. Process for the preparation of mercury-containing aluminum hydride compositions. 3,785,890, Cl. 149-109.000.
Ciba-Geigy AG: *See—*
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Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Method for controlling formation permeability. 3,785,437, Cl. 166-281.000.
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Coal Industry (Patents) Limited: *See—*
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Coca-Cola Company, The: *See—*
Doheny, William Michael, 3,785,669.
Cocozella, Anthony J. Finger-actuated snap open caps for bottles collapsible tubes and the like. 3,785,538, Cl. 222-490.000.
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Coggeshall, John C., 25% to Blowitz, Milroy R., 25% to Pastin, Max and 50% to Magnor, Inc. Blood analyzer. 3,785,772, Cl. 23-253.00r.
Cohen, Milton J. Syringe for injection of freshly mixed liquid-powder. 3,785,379, Cl. 128-218.00m.
Coker, Morton M.: *See—*
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Collins, John D., to Raytheon Company. Time compression signal processor. 3,786,504, Cl. 343-5.0dp.
Collins, Leslie C.; and Smith, Arthur W., to Eastern Rotocraft Corporation. Cable reel spring installation. 3,785,464, Cl. 191-12.20r.
Collins, Robert J., to Upjohn Company, The. Animal feed for obtaining increased production in animals. 3,786,149, Cl. 424-269.000.
Colson, Frank S. Portable kilns. 3,786,162, Cl. 13-22.000.
Colspan Environmental Systems, Inc.: *See—*
Womack, William C., 3,785,557.
Columbia Gas System Service Corporation: *See—*
Reid, Edward A., Jr.; Venendaal, Robert G.; and Myler, George W., 3,785,364.
Combustion Engineering, Inc.: *See—*
Notari, Gennaro V., 3,785,924.
Communications Satellite Corporation: *See—*
Wentworth, Donald L., 3,785,590.
Compac Engineering, Inc.: *See—*
Jones, James W., 3,786,384.
Compackager Corporation: *See—*
Hopkins, Stephen, 3,785,278.
Compagnie de Material et d'Equipements Techniques C.O.M.E.T.: *See—*
Launay, Pierre, 3,785,421.
Compagnie Francaise des Petroles: *See—*
Bonnamy, Philippe J. F.; and Mugneret, Jean A., 3,785,511.
Compagnie Francaise Thomson Houston-Hotchkiss Brandt: *See—*
Hepner, Georges; Lacombat, Michel; and Marcy, Raymond, 3,786,332.
Compagnie Industrielle des Telecommunications: *See—*
Long, Jacques; and Bessot, Jean-Jacques, 3,785,162.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Sinobad, Dosan, 3,786,483.
Wolff, Paul, 3,785,227.
Compton, Wayne W., to Kim Lighting, Inc. Luminaire. 3,786,248, Cl. 240-25.000.
Computer Communications, Inc.: *See—*
Ackley, Donald M., 3,785,047.
Conard, Wendell R.; and Ellis, Ronald M., to Firestone Tire & Rubber Company, The. Flame and burn resistant butadiene resin compositions. 3,786,087, Cl. 260-41.50a.
Confino, Maurice; and Godard, Gerard. Device for the emission of volatile products. 3,785,561, Cl. 239-60.000.
Conkle, Ellsworth V., 5% to Stratman, James A. and Morgan, Fred P. Tailgate assembly. 3,785,695, Cl. 296-50.000.
Conley, Larry R., to Accra-Point Arrays Corporation. Printed circuit board method and apparatus. 3,786,172, Cl. 174-68.500.
Conner, Algie J.; Strother, Charles W.; and Vermilion, Willas L., to Universal Oil Products Company. Fluidized catalytic cracking process. 3,785,962, Cl. 208-164.000.
Connon, Neil W., to Eastman Kodak Company. Synthesis of ethyl 4-haloacetoacetates. 3,786,082, Cl. 260-483.000.
Conoflow Europa N.V.: *See—*
Stamm, David Paul, 3,785,757.
Conrad, Richard A., to Litton Systems, Inc. Identification and polarization of msi/lsi assembly and receptacle. 3,786,393, Cl. 339-17.00c.
Conroy, Robert E., to Air Guard Industries. Athletic armor and inflatable bag assembly. 3,784,985, Cl. 2-22.000.
Consolidated Coal Company: *See—*
Jamison, Will B., 3,786,461.
Consolidated Foods Corporation: *See—*
Peura, Warren A., 3,785,217.
Construction Machinery Company: *See—*
Johnson, James E., 3,785,622.
Construction Materials, Inc.: *See—*
Binger, Wynn S.; Shope, Leonard L.; and Moey, Glenn W., 3,785,705.
Continental Aluminum Products Company: *See—*
Fink, Frederick M., 3,785,106.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Bretschneider, Walter, 3,785,068.
Continental Oil Company: *See—*
Fertl, Walter H.; Cavanaugh, Robert J.; and Hillhouse, John L., 3,785,446.
Hunt, Mack W., 3,785,976.
Neuworth, Martin B., 3,786,100.
Scott, William P., 3,785,974.
Conversion Chemical Corporation: *See—*
Hsu, Grace F., 3,785,939.
Cook, Charles W., to Ball Corporation. Glass container angular displacement device. 3,785,473, Cl. 198-33.0ac.
Cook, Robert Lewellyn, to Flavor Pict, Inc. Tomato plant tying machine. 3,785,087, Cl. 47-1.000.
Coon, Marvin D.: *See—*
Honnen, Lewis R.; and Coon, Marvin D., 3,785,789.
Cooper, Erwin E., to Texas Instruments, Incorporated. Method and apparatus of scanning electromagnetic radiation using rotating detectors-emitters and control circuit. 3,786,269, Cl. 250-334.000.
Cooprider, Rex C., to Diamond International Corporation. Dispensing pump. 3,785,532, Cl. 222-207.000.

Coparfi: *See—*
Letourneur, Guy, 3,785,109.

Cornair, Russell J., to International Basic Economy Corporation. Fluid motor pressure cylinder mounting apparatus. 3,785,252, Cl. 92-161.000.

Cornelius, Edward B.; Delamater, George B.; Koester, David W.; and McEvoy, James E., to Air Products and Chemicals, Inc. Reforming catalyst and preparation. 3,786,001, Cl. 252-464.000.

Corning Glass Works: *See—*
Maurer, Robert D., 3,785,716.
Schultz, Peter C., 3,785,722.

Corrodi, Hans Rudolf; Lycke, Nils Erik Oskar; and Roos, Bjorn-Erik, to Aktiebolaget Hassle. Method for treating virus infection affecting the brain. 3,786,143, Cl. 424-309.000.

Corson, G. & W. H., Inc.: *See—*
Minnick, Leonard John; Webster, William C.; and Smith, Charles L., 3,785,840.

Costner, Donald T.: *See—*
Perry, Leonard T.; Costner, Donald T.; and Noggle, Edward F., 3,785,565.

Cotter, William L., to Darmtronics Engineering, Inc. Alarm detector with increased operating range. 3,786,467, Cl. 340-258.00a.

Coulter Electronics, Inc.: *See—*
Tucker, Lorn Kenneth, 3,786,261.

Coursigns, Inc.: *See—*
Ferris, Robert C., 3,785,331.

Cousserans, Gilbert; Mathey, Francois; and Gryszkiewic-Trouchimowski, Oleg, to Azote et Produits Chimiques S.A. Sulfur containing fungicidal compositions and methods of use. 3,786,155, Cl. 424-301.000.

Cowles, Walter C.: *See—*
Iarossi, Frank J.; and Cowles, Walter C., 3,785,318.

Cox, Arthur R., to United Aircraft Corporation. Nickel-base superalloy. 3,785,809, Cl. 75-171.000.

CPC International Inc.: *See—*
Milkovich, Ralph; and Chiang, Mutong T., 3,786,116.

Craftmaster, Inc.: *See—*
Smith, Raymond Peter, Jr., 3,785,496.

Crafts, Robert L., to Telex Computer Products Inc. Variable rate incrementing recorder. 3,786,456, Cl. 340-174.10a.

Craig, William A. Extension desubluxation hinge appliance. 3,785,372, Cl. 128-80.00c.

Crain, Donald L.: *See—*
Zuech, Ernest A.; and Crain, Donald L., 3,786,106.

Cramer, Werner: *See—*
Asselborn, Peter; Cramer, Werner; Gladbach, Bergisch; and Mullejans, Heinrich, 3,785,189.

Crawford, Alexander, to Massey-Ferguson-Perkins, Limited. Material discharge and spreading apparatus for fluent material. 3,785,573, Cl. 239-658.000.

Crellin, John R., Jr., to Albany International Corporation. Snap lock assembly. 3,785,584, Cl. 242-118.600.

Crespo, Carlos A. Portable submersible pump. 3,785,752, Cl. 417-319.000.

Creswick, William E.: *See—*
Donnithorne, William C.; and Creswick, William E., 3,785,540.

Cretin-Mattenaz, Bernard, to Essilor International (Compagnie Generale d'Optique). Ophthalmic lenses with progressively varying focal length. 3,785,724, Cl. 351-169.000.

Crocker, Harry E.: *See—*
Gaven, Thomas J.; Crocker, Harry E.; and Feldman, Edward, 3,786,189.

Crocker, Roger A.: *See—*
Crocker, Roger A.; and Schoolcraft, Jim F. (said Schoolcraft assor. to said), 3,785,506.

Crocker, Roger A.; and Schoolcraft, Jim F., said Schoolcraft assor. to said Crocker, Roger A. Drill pipe handling apparatus. 3,785,506, Cl. 214-1.00p.

Crosby, John J.: *See—*
Meyfarth, Herbert J.; and Crosby, John J., 3,785,587.

Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Stepped integrated waveguide structure with directional coupling and a method of manufacturing such structures. 3,785,717, Cl. 350-96.0wg.

Crouse, Don E.: *See—*
Hodshire, James O.; Shockley, Quentin O.; and Crouse, Don E., 3,785,785.

Croxon, Brian F.; and Abbott, Laurence F., to Honeywell Information Systems, Inc. Random access memory system utilizing an inverting cell concept. 3,786,437, Cl. 340-173.0dr.

Crystal-X Corporation: *See—*
Delmar, John Kenneth, 3,785,406.

Cumberland Corporation: *See—*
Rhinehart, Vance E.; Coffelt, James D.; and Yother, Floyd G., 3,785,345.

Cunningham, Ernest R., to Grip-Pak, Inc., mesne. Container package. 3,785,484, Cl. 206-65.00c.

Currey, Jack L. Boat construction and method. 3,785,317, Cl. 114-61.000.

Curtis, Charles H.: *See—*
Atwood, George E.; and Curtis, Charles H., 3,785,944.

Cutler-Hammer, Inc.: *See—*
Koenig, Martin F.; Dempsey, George A., Jr.; and Issa, Manuel, 3,786,394.

Czapek, Andre Louis, to Societe d'Oplique, Precision Electronique et Mechanique-Sopelem. Coarse and fine adjustment means. 3,785,218, Cl. 74-479.000

Czoch, Jerzy Wladyslaw: *See—*
Preston, Edward George; and Czoch, Jerzy Wladyslaw, 3,785,902.

Daams, Jasper; and Wellinga, Kobus, to U.S. Philips Corporation. Herbicidal compositions containing 2-(2',6'-dichlorophenyl)-1,3-thiazine-4-one and methods of employing the same. 3,785,799, Cl. 71-90.000.

Dabbs, Robert. Portable collapsible garage. 3,785,697, Cl. 296-136.000.

Dage, Richard, to Colgate-Palmolive Company. Method of treating hypertension with morphanthridines. 3,786,148, Cl. 424-267.000.

Dagiel, Richard T., to Symons Corporation. Concrete wall form tie rod assembly with twist-off spacer members. 3,785,610, Cl. 249-214.000.

Dahl, Martin W.: *See—*
Clagett, Thomas E.; and Dahl, Martin W., 3,785,228.

Dahlgren, Harold P. Sheet interrupter. 3,785,287, Cl. 101-247.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Furuya, Akio; Hachiboshi, Makoto; Adachi, Toshio; and Uchida, Masakatsu, 3,786,004.
Toshinai, Akio; and Hase, Takashi, 3,785,991.
Tsugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,786,010.

Daigle Aqua, Inc.: *See—*
Daigle, Rosaire, 3,785,399.

Daigle, Rosaire, to Daigle Aqua, Inc. Fire hydrant drainage valve. 3,785,399, Cl. 137-305.000.

Daimler-Benz Aktiengesellschaft: *See—*
Lamm, Heinz, 3,785,745.
Strauber, Hans-Jurgen, 3,785,457.

Dainichiseika Color & Chemicals Mfg. Co. Ltd.: *See—*
Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Sekiya, Hitoshi; Matuo, Hiroto; and Kimata, Shizuo, 3,785,946.

Daiwa Can Co. Ltd.: *See—*
Yoshikawa, Tatsumi, 3,785,311.

Dallen, John A., to Standard Products Company, The. Panel sealing system for internal glazing. 3,785,104, Cl. 52-400.000.

Dan Dee Belt & Bag Company, Inc.: *See—*
Rotondi, Paul C., 3,785,893.

Danforth, Leon J., to Markus, Richard B. Hydrofoil vessel. 3,785,319, Cl. 114-665.00h.

D'Angelo, Thomas J.; Strohmeyer, William H.; and Ulbrich, John K., to Meyer Machine Company. Tennis ball propelling machine. 3,785,358, Cl. 124-1.000.

Danneberg, Peter: *See—*
Bauer, Adola; Weber, Karl-Heinz; Danneberg, Peter; and Minck, Kalus, 3,786,051.

Darmtronics Engineering, Inc.: *See—*
Cotter, William L., 3,786,467.

Dart Industries, Inc.: *See—*
Novice, Michall A., 3,785,851.

Dasher, Cyndia H.: *See—*
Dasher, Kenneth R.; and Dasher, Cyndia H., 3,785,729.

Dasher, Kenneth R.; and Dasher, Cyndia H. Overhead projector roller assembly. 3,785,729, Cl. 353-12.200.

Date, Tasuku; and Otani, Junji, to Honda Giken Kogyo Kabushiki Kaisha. Rotary piston internal combustion engine. 3,785,352, Cl. 123-8.130.

Daussan, Andre; Daussan, Jean Charles; and Durasan, Gerard. Device for the treatment of ferrous metal ingots which are intended to be removed from molds without hold-up periods. 3,785,609, Cl. 249-197.000.

Daussan, Jean Charles: *See—*
Daussan, Andre; Daussan, Jean Charles; and Durasan, Gerard, 3,785,609.

Davidovich, Natalia Ivanovna: *See—*
Badenkov, Petr Fedorovich; Petrokas, Leonid Venediktovich; Portny, Gennady Lazarevich; Pukhova, Regina Lazarevna; Davidovich, Natalia Ivanovna; Roitburd, Isaak Shlemovich; Tsaplin, Nikolai Sergeevich; and Pinegin, Vladimir Alexandrovich, 3,785,905.

Davidson, William Ward, Jr., 30% to Brown, Robert C., Jr. Copier-duplicator. 3,785,289, Cl. 101-450.000.

Davies, Robert G.: *See—*
La Cagnina, John M.; and Davies, Robert G., 3,785,816.

Davis, Claude A.: *See—*
Stendig, Joseph L.; and Davis, Claude A., 3,786,502.

Davis, Elmer H. Incinerators for pollution free burning of solid waste materials at low cost and with reduced possibility of accidental fire setting, often, transportable, portable, and/or semi permanently located. 3,785,302, Cl. 110-8.00c.

Davis, Hugh J. Method and apparatus for disease diagnosis. 3,785,366, Cl. 128-2.00b.

Davis, Philip E., Jr. Well packer. 3,785,436, Cl. 166-120.000.

Davis, Robert H.; and Fox, Jon E., to International Business Machines Corporation. Matrix keyboard method and apparatus. 3,786,497, Cl. 340-365.00s.

Davis, Thomas E.; and West, Thomas O., to Dawes Enterprises Incorporated, mesne. Apparatus for application of dyes and/or chemicals to fabrics, webs, strands of yarn, or other material. 3,785,179, Cl. 68-5.00d.

Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., to Motorola, Inc. Voltage and current regulator with automatic switchover. 3,786,344, Cl. 323-20.000.
Davis, William H., to Universal Oil Products Company. Gasoline production process. 3,785,955, Cl. 208-80.000.
Davis, William O.: *See*—
Barr, Irwin R.; La Costa, Nicholas J.; and Davis, William O., 3,785,293.
Dawes Enterprises Incorporated, mesne: *See*—
Davis, Thomas E.; and West, Thomas O., 3,785,179.
Dawes, John L.; and Holmes, Jerry D., to Eastman Kodak Company. Method for preparing carbonyls of ruthenium and osmium. 3,786,132, Cl. 423-417.000.
Dawidowicz, Jan; and Ferraro, Frank A., to Warner-Lambert Company. Dispensing system for bonded razor blade cartridges. 3,785,051, Cl. 30-40.200.
Dawson, James C., to Bohn and Dawson, Inc. Foot control guard. 3,785,222, Cl. 74-561.000.
Dayco Corporation: *See*—
Bowling, Glenn W.; and Kidd, Donald D., 3,785,022.
de Bie, Edouard, to Metallurgie Hoboken-Overpett. Casting of deoxidized copper. 3,785,427, Cl. 164-154.000.
De Cadenet, Jean-Jacques, to Ugine Aciers. Welded austenitic nickel chromium steels. 3,785,786, Cl. 29-196.100.
De Hollander, William Roger; and Klepfer, Harold Holmes, to General Electric Company. Conversion of uranium hexafluoride to uranium dioxide structures of controlled density and grain size. 3,786,120, Cl. 264-.500.
De La Rue Giori S.A.: *See*—
Giori, Gualtiero, 3,785,286.
de Roocker, Alain Joseph Guillaume: *See*—
d'Ostrowick, Pierre Marie Joseph Ghislain de Radzitzky; and de Roocker, Alain Joseph Guillaume, 3,786,084.
De Seversky, Alexander P. Multi-concentric wet electrostatic precipitator. 3,785,125, Cl. 55-119.000.
De Stevens, George: *See*—
Dickel, Daniel Frederick; and De Stevens, George, 3,786,085.
De Vita, Luciano; and Mancini, Emilio, to Alitalia Linee Aeree Italiame S.p.A. Apparatus for testing systems and data transmitting networks by simulation. 3,786,187, Cl. 178-69.00a.
D.E.A. Digital Electronic Automation S.p.A.: *See*—
Sartorio, Franco, 3,785,743.
Dean, William H.; and Henes, Richard W., said Dean assor. to said Henes, Richard W. Cover top for pickup truck beds. 3,785,698, Cl. 296-137.00b.
Decalock Limited: *See*—
Armstrong, Richard James, 3,785,686.
Decision Data Corporation: *See*—
Hunter, Alexander, 3,785,288.
Deere & Company: *See*—
Kittle, Carl Edwin; and Spencer, Keith Louis, 3,785,157.
Deering Milliken Research Corporation: *See*—
Fay, Robert C., 3,785,906.
DeGain, William J.: *See*—
Castor, Gary E.; and DeGain, William J., 3,785,290.
Delacroix, George; and Beneytoot, Lucien, to Societe Anonyme: Ciments Lafarge. Continuous melting of very high melting point materials. 3,785,764, Cl. 432-85.000.
Delamater, George B.: *See*—
Cornelius, Edward B.; Delamater, George B.; Koester, David W.; and McEvoy, James E., 3,786,001.
Delano, Roger Albert: *See*—
Schofield, John Allan; and Delano, Roger Albert, 3,785,987.
Delcano, Henry H.; Demchak, William M.; and Jakubowski, Marek, to International Business Machines Corporation. Apparatus for separating and feeding documents. 3,785,640, Cl. 271-90.000.
Delmar, John Kenneth, to Crystal-X Corporation. Cartridge pack for trash compaction machine. 3,785,406, Cl. 138-103.000.
Deluca, Hector F.: *See*—
Schroeder, Collin H.; Lechnir, Richard J.; Cleveland, Peter G.; Deluca, Hector F.; and Derse, Philip H., 3,786,062.
Deluca, Paul V., to Porta Systems Corporation. Electrical connector. 3,786,395, Cl. 339-66.00m.
Dembinski, Krzysztof: *See*—
Anthony, Anne-Marie, nee Barbier; Dembinski, Krzysztof; Faucher, Michele, nee Dupre; and Dupont, Lucien, 3,786,165.
Demchak, William M.: *See*—
Delcano, Henry H.; Demchak, William M.; and Jakubowski, Marek, 3,785,640.
Dempsey, George A., Jr.: *See*—
Koenig, Martin F.; Dempsey, George A., Jr.; and Issa, Manuel, 3,786,394.
Denker, James M., to Nutron Corporation. Positioning. 3,785,634, Cl. 269-71.000.
Denki Onkyo Co., Ltd.: *See*—
Katayama, Shitomi; Horikawa, Hideichi; Obuchi, Masao; and Ito, Yoshihiro, 3,786,031.
Derleth, Helmut; and Fischer, Hermann, to Kali-Chemie Aktiengesellschaft. Process of making graphite-metal chloride intercalation compounds and product obtained thereby. 3,785,999, Cl. 252-441.000.
Derse, Philip H.: *See*—
Schroeder, Collin H.; Lechnir, Richard J.; Cleveland, Peter G.; Deluca, Hector F.; and Derse, Philip H., 3,786,062.
Desbordes, Jean, to Societe Anonyme dite: Stein Industrie. Grinding mill. 3,785,576, Cl. 241-57.000.
DeScarbon, Christian M.L.L. Bourcier. Top reinforcement for pneumatic tires. 3,785,423, Cl. 152-361.00r.
Deshayes, Philippe Marie: *See*—
Weber, Guy Paul; and Deshayes, Philippe Marie, 3,785,730.
Design Systems, Inc.: *See*—
Streander, George W., 3,785,057.
Streander, George W., 3,785,245.
Deutsch, Albert S.; and Poppo, Joseph M., to Polychrome Corporation. Light-sensitive quinone diazide compounds, compositions, and presensitized lithographic plate. 3,785,825, Cl. 96-75.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Chapman, Trevor; Schwarze, Werner; and Weigert, Wolfgang, 3,786,053.
Devenyi, Tibor Francis, to Northern Electric Company Limited. Electrical reactance and loss measurement apparatus and method. 3,786,349, Cl. 324-57.00r.
Devillers, Pierre Louis Henri; and Loilier, Michel, to Syndicat National des Fabricants de Sucre de France. Process and plant for the purification of raw sugar juice. 3,785,863, Cl. 127-9.000.
Devitt, John L., to Gates Rubber Company, The. Zinc electrode. 3,785,868, Cl. 136-30.000.
Devor, Donald P.: *See*—
Robinson, Morton; and Devor, Donald P., 3,786,365.
DeVries, Jan Roelof Jochum Hendrik, to Industriele Onderneming Wavin N.V. Plastic block bag with a valve. 3,785,547, Cl. 229-62.500.
Dewey, Herbert F. Metal strip roll forming stand. 3,785,191, Cl. 72-181.000.
Di Sabatino, Roland, Jr., to Ametek, Inc. Swing disc check valve. 3,785,611, Cl. 251-25.000.
Diagnostic Instruments, Inc.: *See*—
Jvirblis, Alex E.; and Roth, Walter, 3,786,252.
Diamond Aerosol Corporation: *See*—
Helmrich, Ralph, 3,785,569.
Diamond International Corporation: *See*—
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Dick, A. B., Company: *See*—
Ziebka, Bernard M.; and Tamborrino, Paul A., 3,785,639.
Dickel, Daniel Frederick; and De Stevens, George, to Ciba-Geigy Corporation. Aryl substained cycloaliphatics acids. 3,786,085, Cl. 260-515.00r.
Didier, Diane, Enterprises, Inc.: *See*—
Naylor, Walter G., Jr., 3,785,075.
Dietrich, Johannes: *See*—
Pfeiffer, Kurt; Dietrich, Johannes; Beckmann, Gunter; and Herkt, Karl-Heinz, 3,785,430.
Dillon, Brian D.: *See*—
Huffaker, James E.; Myers, Ernest L.; Dillon, Brian D.; and Dolen, Cecil W., 3,785,039.
Dinnerstein, Albert J., to Metaframe Corporation. Animal exercising observatory. 3,785,347, Cl. 119-29.000.
Ditz-Crane: *See*—
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,785,114.
Ditzler, Richard C.: *See*—
Burstein, Norman; and Ditzler, Richard C., 3,785,778.
Dix, James S.: *See*—
Mathis, Ronald D.; and Dix, James S., 3,786,021.
Dixi S.A.: *See*—
Rosch, Eduard, 3,786,276.
Dixon, Farris L.; and Young, Sherwood L., to American Standard, Inc. Water control valve structure. 3,785,394, Cl. 137-218.000.
Dobbs, Harold J.: *See*—
Kelseaux, Ray M.; Dobbs, Harold J.; and Priebe, Frank D., 3,785,202.
Dodds, Irvine. Letter placement indicator for typewriters and means responsive to the indicator for simultaneous setting of margin stops. 3,785,471, Cl. 197-63.000.
Doesburg, Van I.: *See*—
Householder, Kermit W.; and Doesburg, Van I., 3,785,935.
Doheny, William Michael, to Coca-Cola Company, The. Convertible bulk hand truck. 3,785,669, Cl. 280-47.180.
Dolen, Cecil W.: *See*—
Huffaker, James E.; Myers, Ernest L.; Dillon, Brian D.; and Dolen, Cecil W., 3,785,039.
Domingorene, Albert A., to General Electric Company. House-hold refrigerator. 3,785,168, Cl. 62-455.000.
Donnithorne, William C.; and Creswick, William E., to Algoma Steel Corporation, Limited, The. Golf tee type stopper for molten metal disengaging. 3,785,540, Cl. 222-559.000.
Dorr-Oliver, Incorporated: *See*—
Rosenquest, John B., Jr., 3,785,574.
Dorton, Robert H. Safety hook. 3,785,015, Cl. 24-241.0pp.
Dorwin, Walter League Associates Incorporated: *See*—
Ryan, Jack E.; and Collin, Sylvan, 3,785,490.
d'Ostrowick, Pierre Marie Joseph Ghislain de Radzitzky; and de Roocker, Alain Joseph Guillaume. Preparation of esters of formic acid. 3,786,084, Cl. 260-491.000.
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., to Cities Service Company. Flame retardant compositions. 3,786,023, Cl. 260-45.75b.
Dotto, Gianni A., to Anglemyer, Alfred A. Electrostatic wand. 3,785,383, Cl. 128-414.000.
Dovbnya, Alexandr Vasilievich: *See*—

Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Polikarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.

Dow Chemical Company, The: *See—*
Atkins, Bobby Leroy; and Bashaw, Robert Niles, 3,786,260.

Dow Corning Corporation: *See—*
Householder, Kermit W.; and Doesburg, Van I., 3,785,935.

Dower, James. Stalls for animals and gate assemblies therefor. 3,785,346, Cl. 119-27.000.

Draber, Wilfried: *See—*
Buchel, Karl-Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,786,131.

Dragerwerk Aktiengesellschaft: *See—*
Warncke, Ernst; and Haas, Hans, 3,785,333.

Drathschmidt, Carl J. Magnetic controlled door lock. 3,785,188, Cl. 70-276.000.

Dressayre, Jean, to U.S. Philips Corporation, mesne. Fail safe control circuit for traffic lights. 3,786,414, Cl. 340-78.000.

Drexhage, Karl H.; Reynolds, George A.; and Specht, Donald P., to Eastman Kodak Company. Laser dye composition. 3,786,369, Cl. 331-94.500.

Driver, Wilbur B., Company: *See—*
Steinitz, Robert, 3,785,808.

Drori, Assa. Recloseable carton. 3,785,478, Cl. 206-45.310.

Drozdov, Nikolai Ivanovich: *See—*
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.

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Dumbaugh, George D., to Vibranetics, Inc. Flowable material storage means. 3,785,529, Cl. 222-161.000.

Dunthorn, David I.: *See—*
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Durrwachter, Eugen Emil; Harmsen, Ulf; and Merl, Wilhelm, to Durrwachter, Eugen, Dr., DODUCO. Silver-metal oxide composite and method of manufacturing the same. 3,785,810, Cl. 75-173.00a.

Dutton, Edna M.: *See—*
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Dutton, Harold R.: *See—*
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Duval Corporation: *See—*
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Dyna-Kool Corporation: *See—*
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Dynamics Corporation of America: *See—*
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Eaton Corporation: *See—*
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Ecker, George Franklin: *See—*
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Eckrich, Peter, and Sons, Inc.: *See—*
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Economopoulos, Mario, to Centre National de Recherches Metallurgiques. Treatment of metal rod or wire. 3,785,878, Cl. 148-18.000.

Edes, Ferenc; and Gianatasio, Henry L., to Air-Trol Systems, Inc. Web-guiding apparatus and position-sensing and control unit therefor. 3,785,542, Cl. 226-22.000.

Edgar, William D.; and Jonnet, Albert G., to Koppers Company, Inc. Apparatus for collecting and removing effluent emitted while pushing coke. 3,785,933, Cl. 202-263.000.

Edwards, James D., to Scott & Fetzer Company, The. Plug-in timer assembly. 3,786,208, Cl. 200-51.00r.

Edwards, Joseph; and Whittle, John Edward, to International Nickel Company, Inc., The. Battery plates comprising a multiplicity of perforated metallic foil elements and a battery utilizing same. 3,785,867, Cl. 136-6.00r.

Edwards, Philip Neil, to Imperial Chemical Industries, Limited. Certain bis (pyridinium) quaternary salts 3,786,058, Cl. 260-294.80r.

Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., to Hughes Aircraft Company. Dynamic range control system. 3,786,506, Cl. 343-7.00a.

Ege, Hans, to Underwriters Safety Device Company. Roll-apart terminal block assembly. 3,786,400, Cl. 339-198.00p.

Egli, Henry O. Apparatus for and method of calibrating workpiece sensor and for aligning sensor and workpiece. 3,785,058, Cl. 33-172.00d.

E.G.O. Elektro-Gerate AG: *See—*
Fischer, Karl, 3,786,218.

Egtvedt, Robert B.; and Booth, William M., to Wolverine World Wide, Inc. Shoe manufacturing apparatus. 3,784,995, Cl. 12-1.00a.

Ehlers, John G., to United States of America, Navy. Battery monitor system. 3,786,343, Cl. 324-29.005.

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Electric salient-pole synchronous machine rotor solid metal pole piece: *See—*
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Elisofon, Barry A.; and Elisofon, Judith. Child's bed support for motor vehicles. 3,784,990, Cl. 5-94.000.

Elisofon, Judith: *See—*
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Elitex, Zavody Textilniho Strojirenstvi: *See—*

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Ellis, R. James, to Eckrich, Peter, and Sons, Inc. Microbiological activity testing device. 3,785,930, Cl. 195-127.000.
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Eminger, Robert J., to Windamatic Systems, Inc. Motion altering apparatus. 3,785,212, Cl. 74-23.000.
Emmons, William D., to Rohm and Haas Company. Caulking composition comprising polymer having addition polymerized backbone having carboxyl groups esterified with drying oil fatty acid glycidyl ester. 3,786,020, Cl. 260-41.00a.
Endo, Ichiro: *See*—
Inoue, Eiichi; Shimizu, Isamu; Endo, Ichiro; and Kobayashi, Hajime, 3,785,820.
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Engalitcheff, John, Jr., to Baltimore Aircoil Company, Inc. Injector type evaporative heat exchanger. 3,785,625, Cl. 261-29.000.
Engeler, William E.; and Garfinkel, Marvin, to General Electric Company. Method and device for storing information and providing an electric readout. 3,786,441, Cl. 340-173.rls.
Engert, Heinz; and Engert, Heinz-Dieter. Friction wheel drive especially for cassette magnetic tape recorders. 3,785,586, Cl. 242-201.000.
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Engert, Heinz; and Engert, Heinz-Dieter, 3,785,586.
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Howorth, Jonathan Ross, 3,786,296.
English Electric Valve Company, Limited: *See*—
Chalmers, Peter Michael, 3,786,301.
Engstrom, Keith A., to Illinois Tool Works, Inc. Solid state switch control circuit. 3,786,284, Cl. 307-314.000.
Enomoto, Koji, to Nissan Motor Company, Limited. Hydraulic shift valve for an automotive automatic power transmission. 3,785,614, Cl. 251-63.000.
Environeering, Inc.: *See*—
McIlvaine, Robert W., 3,785,119.
Epifanov, Valery Sergeevich: *See*—
Feldshtein, Isaak Yakovlevich; Epifanov, Valery Sergeevich; Tsygankov, Vladimir Fedorovich; Pashkov, Alexandr Nikitovich; Mogilny, Dmitry Gavrilovich; and Yakovlev, Mikhail Vasilievich, 3,785,032.
Epis, James J.; and Kuo, Samuel Chung-Shu, to GTE Sylvania, Inc. Broadband high frequency balun. 3,786,372, Cl. 333-26.000.
Equitable Equipment Company, Inc.: *See*—
Kersteter, Ammon W., 3,785,322.
Erdmann, Hans, to Waldes Kohinoor, Inc. Hand tool for assembling open, bowed-body retaining rings having locking prongs in shaft or spindle grooves. 3,785,037, Cl. 29-200.00h.
Ereskunov, Nikolai Grigorievich: *See*—
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Ericson, John F. E., to Marvel Industries, Inc. Drum lifting attachment. 3,785,692, Cl. 294-90.000.
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ERSA Ernst Scahs KG: *See*—
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ESB Incorporated: *See*—
Coffey, James P.; and Duddy, Joseph C., 3,785,931.
Leeson, Jeffrey S.; and Laczko, Robert P., 3,785,873.
Escobedo, Francisco. Self-steering bicycle-type toy vehicle. 3,785,086, Cl. 46-213.000.
Essilor International (Compagnie Generale d'Optique): *See*—
Cretin-Mattenaz, Bernard, 3,785,724.
Esso Production Research Company: *See*—
Collier, Howard E., 3,785,402.
Maurer, William C.; and Lock, Everett H., 3,785,659.
Esso Research and Engineering Company: *See*—
Chandler, Roger E., 3,786,077.
Flowerday, Peter; and Ropson, Robert, 3,785,977.
Iarossi, Frank J.; and Cowles, Walter C., 3,785,318.
Li, Sik U.; and Koros, Robert M., 3,785,779.
List, Edward L., 3,785,204.
Merrill, Howard E.; and Lunt, Robert S., III, 3,785,960.
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Estrick, Vaughn H.: *See*—
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Gras, Elie, 3,785,900.
Ethyl Corporation: *See*—
Bitting, James L.; and Hagens, Robert J., 3,785,636.
Marsee, Frederick J., 3,785,624.
Ettre, Kitty S.; and Castles, George Richard, to Vitta Corporation. Tape transfer of sinterable conductive, semiconductive or insulating patterns to electronic component substrates. 3,785,895, Cl. 156-89.000.
Evans, Norol T.: *See*—
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., 3,786,506.
Ewing, James O.; and Reilly, Philip E., to Bendix Corporation, The. Deep ocean transponder. 3,786,404, Cl. 340-2.000.
Fails, Julius G. Preheating system for plywood hot press machine. 3,785,279, Cl. 100-93.00p.
Fairbanks, "EJ:" L. Heat engine. 3,785,144, Cl. 60-25.000.
Fairchild Camera and Instrument Corporation: *See*—
Jankowski, Alfred S.; Moll, John L.; and Funk, Ernest J., 3,786,499.
Farah Manufacturing Company, Inc.: *See*—
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
Jacob, Ingolf; Buttner, Gert; and Heinrich, Karl, 3,785,017.
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Ribka, Joachim; and Schwerin, Siegfried, 3,785,843.
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Fasco Industries, Inc.: *See*—
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Faucher, Michele, nee Dupre: *See*—
Anthony, Anne-Marie, nee Barbier; Dembinski, Krzysztof; Faucher, Michele, nee Dupre; and Dupont, Lucien, 3,786,165.
Fay, Homer; and Brandle, Charles D., Jr., to Union Carbide Corporation. Process for producing untwinned single crystals of la $A10_3$. 3,785,992, Cl. 252-301.40r.
Fay, Robert C., to Deering Milliken Research Corporation. Yarn feed apparatus for pile carpet machine. 3,785,906, Cl. 156-435.000.
Federal Pacific Electric Company: *See*—
MacPhee, Colin A. A., 3,786,356.
Feldman, Edward: *See*—
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Feldmann, Hennig: *See*—
Hock, Fromund; Feldmann, Hennig; and Fialkowski, Heinz, 3,785,714.
Feldshtein, Isaak Yakovlevich; Epifanov, Valery Sergeevich; Tsygankov, Vladimir Fedorovich; Pashkov, Alexandr Nikitovich; Mogilny, Dmitry Gavrilovich; and Yakovlev, Mikhail Vasilievich. Device for piling rotor sheets for magnetic circuits of electrical macines. 3,785,032, Cl. 29-203.001.
Felten & Guilleaume Kabelwerke Aktiengesellschaft: *See*—
Asselborn, Peter; Cramer, Werner; Gladbach, Bergisch; and Mullejans, Heinrich, 3,785,189.
Fenway Machine Co., Inc.: *See*—
Yermish, Israel J., 3,785,052.
Fernandez, John J., Sr. Helical coil filter apparatus. 3,785,498, Cl. 210-351.000.
Fernandez, Jose M., to Eastman Kodak Company. Novel cyan-dye forming coupler. 3,785,829, Cl. 96-100.000.
Ferraro, Frank A.: *See*—
Dawidowicz, Jan; and Ferraro, Frank A., 3,785,051.
Ferrat, Jean-Marie: *See*—
Prayer, Gerard; and Ferrat, Jean-Marie, 3,785,522.
Ferris, Robert C., to Coursigns, Inc. Plastic sign kit. 3,785,331, Cl. 116-63.00r.
Ferro, Armand P.; Harnden, John D., Jr.; and Kurz, Bruno F., to General Electric Company. High speed light detector amplifier. 3,786,264, Cl. 250-214.00r.
Fertl, Walter H.; Cavanaugh, Robert J.; and Hillhouse, John L., to Continental Oil Company. Predicting occurrence of geopressured subterranean zones during drilling. 3,785,446, Cl. 175-50.000.
Feth, Georg: *See*—
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Fialkowski, Heinz: *See*—
Hock, Fromund; Feldmann, Hennig; and Fialkowski, Heinz, 3,785,714.
Fielding, Alfred W., to Sealed Air Corporation. Method for the manufacture of cellular material for cushioning and other purposes. 3,785,899, Cl. 156-209.000.
Fifield, Ralph R. Load control device. 3,785,221, Cl. 74-242.0hp.
Fifth Dimension, Inc.: *See*—
Bitko, Sheldon S., 3,786,217.
Filatov, Nikolai Grigorievich: *See*—
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.
Finike Italian Marposs-Soc. In Accomandita Semplice di Mario Possate & C.: *See*—
Pozzetti, Mario, 3,785,091.
Fink, Frederick M., to Continental Aluminum Products Company. Glazing flange attachment system. 3,785,106, Cl. 52-476.000.

Finley, Dewayne W.; Smith, Harvey E.; and Fishwild, Owen L., to Standard Brands, Inc. Extraction of oil from oil bearing seeds. 3,786,078, Cl. 260-412.400.
Finley, Donald L.; and Morehead, Edward A., to Eastman Kodak Company. Method and apparatus for controlling the manufacture of synthetic fibers. 3,785,062, Cl. 34-34.000.
Finn, Charles P. Apparatus and method for locating the center of gravity of a golf club. 3,785,197, Cl. 73-65.000.
Fiorino, Benjamin C., to International Business Machines Corporation. Method and apparatus for detecting the beginning of data block. 3,786,358, Cl. 328-138.000.
Fiorletta, Carol J.: *See—*
Fiorletta, Robert J.; and Fiorletta, Carol J., 3,786,500.
Fiorletta, Robert J.; and Fiorletta, Carol J. Fiber optic translator. 3,786,500, Cl. 340-380.000.
Firestone Tire & Rubber Company, The: *See—*
Conard, Wendell R.; and Ellis, Ronald M., 3,786,087.
Lohr, Delmar F., Jr.; and Kay, Edward Leo, 3,786,009.
Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Photographic aqueous dispersion concentrates. 3,785,824, Cl. 96-66.00r.
Fischell, Robert E., to United States of America, Navy. System for sensing and compensating for the disturbance forces on a spacecraft. 3,785,595, Cl. 244-1.0sa.
Fischer, Artur. Expansion anchor. 3,785,241, Cl. 85-71.000.
Fischer, Edgar: *See—*
Noetzel, Siegfried; and Fischer, Edgar, 3,785,989.
Fischer, Hermann: *See—*
Derleth, Helmut; and Fischer, Hermann, 3,785,999.
Fischer, Karl, to E.G.O. Elektro-Gerate AG. Adjustable thermostatic device with snap switches. 3,786,218, Cl. 200-83.00z.
Fisher, John M., to Goodrich, B. F., Company, The. Movable wall for engine nozzle. 3,785,567, Cl. 239-265.390.
Fishwild, Owen L.: *See—*
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Fisk, Dale E.: *See—*
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Cairns, Hugh; Chambers, Albert; and Lee, Thomas Brian, 3,786,071.
Fitch, Scott McDowell; Gallina, Alfonso Vincent; Gerkensmeier, Otto Frederick; and Warwick, Peter Stephen, to Bell Telephone Laboratories, Incorporated. Data character decoder with provision for decoding before all character elements are received. 3,786,42, Cl. 340-172.500.
Fitzgerald, Nelson, to General Electric Company. Jacketed lamp mount frame clip. 3,786,298, Cl. 313-292.000.
Fjellstrom, Bengt. Tube bending device. 3,785,192, Cl. 72-319.000.
Flavor Pict, Inc.: *See—*
Cook, Robert Lewellyn, 3,785,087.
Fleck, Jacques, to Krebs & Cie. Electrolyzer comprising diaphragmless cell spaces flowed through by the electrolyte. 3,785,951, Cl. 204-268.000.
Flis, Richard J.: *See—*
Gamble, John G.; and Flis, Richard J., 3,786,272.
Floessel, Dieter, to Brown, Boveri & Company, Limited. Insulation gas filled encapsulated high voltage electrical conductor. 3,786,169, Cl. 174-28.000.
Floessel, Dieter, to Brown, Boveri & Company, Limited. Insulation gas filled encapsulated high voltage electrical conductor. 3,786,170, Cl. 174-28.000.
Floessel, Dieter, to Brown, Boveri & Company, Limited. Insulation gas filled encapsulated high voltage electrical conductor. 3,786,174, Cl. 174-28.000.
Flowerday, Carl W., to Maes Incorporated. Wire marker. 3,785,337, Cl. 116-114.00r.
Flowerday, Peter; and Ropson, Robert, to Esso Research and Engineering Company. Lubricating compositions. 3,785,977, Cl. 252-33.600.
FMC Corporation: *See—*
Hammond, Douglas L., 3,785,159.
Lee, Fui-Tseng H.; and Volpp, Gert P., 3,786,150.
Folger Adam Co.; division of Telkee, Inc.: *See—*
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Fordice, Michael W.: *See—*
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Foremost-McKesson, Inc.: *See—*
Pollard, Henry L., 3,785,865.
Forlani, Franco, to Honeywell Information Systems Italia. Method for mounting integrated circuit chips on interconnection supports. 3,785,044, Cl. 29-591.000.
Formica, Francis A.; and Izenberg, James, to Indol Chemical Co., Inc. Bis(benzamidoazo)-4,4'-bi-acetoacetyl-O-chloroanilide dyestuffs. 3,786,042, Cl. 260-176.000.
Forsyth, John P.; and Forsyth, Robert W. Vehicular transportation system and apparatus. 3,785,514, Cl. 214-38.00r.
Forsyth, Robert W.: *See—*
Forsyth, John P.; and Forsyth, Robert W., 3,785,514.
Fortin, Robert F.; and Sims, Larry A., to Pharmasel; division of American Hospital Supply Corporation. Arterial blood sampler. 3,785,367, Cl. 128-2.00f.
Foster, Henry O.: *See—*
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Foundation: Research Institute of Electric and Magnetic Alloys, The: *See—*
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Fouquet-Werk Frauz & Planck: *See—*
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Fox, Jon E.: *See—*
Davis, Robert H.; and Fox, Jon E., 3,786,497.
Fox, Robert M. Air driven vehicle. 3,785,330, Cl. 115-70.000.
Francis, Robert L.; and Rouse, Paul L., to International Harvester Company. Multiple use finger assembly for a combine harvester. 3,785,134, Cl. 56-400.000.
Frank, Edmond, to Packard Instrument Company, Inc. Method and apparatus for optimizing measurement of radioactivity of samples in scintillation type counter. 3,786,259, Cl. 250-328.000.
Franks, John T., Jr.: *See—*
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Frederiksen, Thomas M.: *See—*
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Freedman, Paul M.: *See—*
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Freeman, Ardee H., to Wheelabrator-Frye, Inc. Centrifugal blasting wheel. 3,785,105, Cl. 51-9.000.
Freeman, Harlan G.; Baxter, Gene F.; and Tiedeman, George T., to Weyerhaeuser Company. Rapid curing resin compositions comprising a phenol-aldehyde condensation polymer modified with an aminonaphthalene. 3,786,025, Cl. 260-51.500.
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; Gormann, Willi; and Pelka, Walter, to Gebr. Eickhoff Maschinenfabrik und Eisengiesseru m.b.H. Coal plow with individually pivoted blades. 3,785,703, Cl. 299-34.000.
Frey, Sameul S., to Oakite Products, Inc. Method for avoiding pitting in plating oxide-film-developing metals. 3,785,866, Cl. 134-3.000.
Frey, Walter; and Toth, Istvan, to Sandoz Ltd. Separation process. 3,786,073, Cl. 260-369.000.
Friday, David G.; and Friday, Philip L. Fruit harvesting apparatus. 3,785,131, Cl. 56-328.0ts.
Friday, Philip L.: *See—*
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Friedland, Harry; and Langill, Addison W., Jr., to Process Systems, Inc. Fluid flow control system. 3,785,389, Cl. 137-1.000.
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, to Bio/Physics Systems, Inc. Photoanalysis method. 3,785,735, Cl. 356-39.000.
Friedrich, Rene, to USL Corporation. Method for inserting tendons into sheathing. 3,785,617, Cl. 254-1.000.
Friedrich Uhde GmbH: *See—*
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Frigitronics, Inc., mesne: *See—*
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Fritze, Peter Ernst, to Union Carbide Corporation. Process for preparing ϵ-thiocaprolactones. 3,786,066, Cl. 260-327.00r.
Fritzinger, George H. Hand operable tape dispenser and applicator. 3,785,901, Cl. 156-527.000.
Frye, Harold E.; and McMahon, Robert F., to International Business Machines Corporation. Full capacity small size microprogrammed control unit. 3,786,434, Cl. 340-172.500.
Frye, Kenneth G.; Lucas, Robert G.; Seidel, Kenneth L.; and Rohosy, Soma M., to Beloit Corporation. Web support table. 3,785,232, Cl. 83-156.000.
Frykhult, Rune, to Aktiebolaget Celleco. Cyclone separator with underflow dilutor. 3,785,489, Cl. 209-211.000.
Fuglister, Peter: *See—*
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Fuji Denki Kagaku Kabushiki Kaisha: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, 3,785,247.
Fujii, Hajime; and Hattori, Tatsuo, to Toyo Soda Manufacturing Co., Ltd. Method for flameproofing fibers. 3,785,859, Cl. 117-136.000.
Fujii, Heihachi; Kasano, Kazuhiko; Matsuno, Minoru; Moroi, Tadahiko; and Kitamura, Munehiro, to Ise Electronics Corporation. Anode substrates for multi-digit type fluorescent display tubes. 3,786,295, Cl. 313-109.500.

Fujimori, Yoshiaki, to Kabushiki Kaisha Suwa Seikosha. Transparent instrument cover having anti-reflection coating on selected portions thereof. 3,785,143, Cl. 58-91.000.

Fujiwara, Katsuji. Steam trap of the free float type. 3,785,555, Cl. 236-53.000.

Fujiwara, Shohei: *See—*
Kano, Gota; Fujiwara, Shohei; Iizuka, Mutsuo; Hasegawa, Hiromasa; and Sawaki, Tsukasa, 3,786,320.

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Fulton, James F.; and Rinaldi, Joseph A., to Fulton & Partners, Inc. Portable sleeping compartment. 3,785,693, Cl. 296-23.00r.

Fumia, Arthur, Jr.; and Brooker, Leslie G. S., to Eastman Kodak Company. Novel dyes cyanine with enamines containing two fused carbocyclic rings. 3,786,046, Cl. 260-240.00r.

Funk, Ernest J.: *See—*
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Funk, John: *See—*
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Furuno Electric Company, Limited: *See—*
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Furuya, Akio; Hachiboshi, Makoto; Adachi, Toshio; and Uchida, Masakatsu, to Dai Nippon Toryo Co., Ltd., Leben Utility Co., Ltd. and Toyobo Co., Ltd. Thermosetting resinous composition. 3,786,004, Cl. 260-2.50n.

Gaedderi, Melvin V., to Hesston Corporation. Header mounting for row units. 3,785,130, Cl. 56-98.000.

GAF Corporation: *See—*
Horai, John C.; and Tucker, Stephen F., 3,785,798.
Slimowicz, Chester; and Welch, Walter J., 3,785,826.

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Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalez, Roger A.; and Smith, John A., 3,785,533.

Galiani, Roberto. Elastic supporting surface and method for its production. 3,784,992, Cl. 5-186.00r.

Galitenko, Mikhail Mitrofanovich: *See—*
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Galloway, Lawrence H.; Harast, Leonard E.; and Plimi, Frank V., Jr., to Illinois Tool Works Inc. Modular ceiling connector. 3,785,110, Cl. 52-715.000.

Gamble, John G.; and Flis, Richard J., to Veeder Industries, Inc. Hall effect rotary pulse generator. 3,786,272, Cl. 307-106.000.

Ganteaume, Robert A. Event recorder. 3,785,261, Cl. 95-12.000.

Gappisch, Max; Walter, Friedrich Claus; and Pollmacher, Horst, to Argus Gesellschaft mbH. Device for the flow control of media, particularly contaminated liquids and/or gases. 3,785,404, Cl. 137-614.000.

Garbovitsky-Gordon, Alexandr Iosipovich: *See—*
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.

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Garretson, George W. Post and post base assembly. 3,785,107, Cl. 52-514.000.

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Gaspariants, Artemy Mikhailovich: *See—*
Mikhalsky, Fedor Mikhailovich; Gaspariants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

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Gatsis, John G.: *See—*
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Gatz, William L.; and Rennicke, Kenneth A., to Royal Industries, mesne. Apparatus and method for feeding material from storage bins and the like. 3,785,512, Cl. 214-17.00d.

Gaudiano, Anthony V.: *See—*
Banjavich, Mark P.; Morrissey, George R.; and Gaudiano, Anthony V., 3,785,160.

Gaven, Thomas J.; Crocker, Harry E.; and Feldman, Edward, to McGraw-Edison Company. Telephone announcing and message recording machine. 3,786,189, Cl. 179-6.00r.

Gawlick, Heinz: *See—*
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Gaylord, Asa K., to Gaylord Industries. Pollution-free kitchen ventilator. 3,785,124, Cl. 55-118.000.

Gaylord Industries: *See—*
Gaylord, Asa K., 3,785,124.

Gaylord, John A., to Koch, H., & Sons, Inc. Parachute harness release. 3,785,597, Cl. 244-151.00a.

Gaz Transport, S.A.R.L.: *See—*
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Gebr. Eickhoff Maschinenfabrik und Eisengiesserru m.b.H.: *See—*
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Gedye, Rodney Banfield. Display units. 3,785,499, Cl. 211-4.000.

Gehlhaus, Paul H.: *See—*
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Geigy, J. R., A.G.: *See—*
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General Electric Company: *See—*
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Bailey, Gordon B.; and Wilhelm, Carl F., Jr., 3,785,146.
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General Mills Chemicals, Inc.: *See—*
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Hodshire, James O.; Shockley, Quentin O.; and Crouse, Don E., 3,785,785.
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Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalez, Roger A.; and Smith, John A., to Becton, Dickinson and Company. Coombs serum cartridge with indexing means. 3,785,533, Cl. 222-327.000.
Genta, Guido, to American Aniline Products, Inc. 1,4-Diamino-2-alkylihiophenoxy-3-haloanthraquinone polyester dyes. 3,786,074, Cl. 260-380.000.
Genta, Guido R., to American Aniline Products, Inc. Yellow pigment compositions. 3,786,017, Cl. 260-38.000.
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Gerber Garment Technology, Inc.: *See—*
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Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Apparatus for producing seamed articles from sheet material. 3,785,898, Cl. 156-353.000.
Gerber Products Company: *See—*
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Geusic, John Edward, to Bell Telephone Laboratories, Incorporated. Single wall domain generator. 3,786,452, Cl. 340-174.0tf.
Gevorkov, Grigory Sergeevich: *See—*
Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Polikarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.
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Giannetti, Joseph P.; McIlvried, Howard G.; and Sebulsky, Raynor T., to Gulf Research & Development Company. Process for the production of 2-2-dimethylbutane. 3,786,108, Cl. 260-683.660.
Gibbs, Francis E., to Kaiser Aluminum & Chemical Corporation. Welding fixture. 3,786,225, Cl. 219-124.000.
Giffard, Louis. Filtering element. 3,785,497, Cl. 210-282.000.
Gilbert, Roswell W., to Technical Management Services, Inc. Transformer for direct and/or alternating currents. 3,786,338, Cl. 323-48.000.
Gillespie Corporation: *See—*
Sibley, Louis F., 3,785,541.
Sibley, Louis F., 3,785,688.
Gillstrap, Peter M. Means for suspending cables from mine roof. 3,785,598, Cl. 248-58.000.
Gilmore, William J., to American Chain & Cable Company, Inc. Safety belt system. 3,785,701, Cl. 297-385.000.
Giori, Gualtiero, to De La Rue Giori S.A. Wiping cylinder of steel engraving printing machine and method of making it. 3,785,286, Cl. 101-155.000.
Girard, Andre, to Aronelle Textiles, Limited. Apparatus for weighing yarn on a yarn winding machine. 3,785,582, Cl. 242-39.000.
Girardi, Vincent J., to Babcock & Wilcox Company, The. Transfer device. 3,785,509, Cl. 214-8.50h.
Girault, Pierre: *See—*
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Girault, Pierre; and Hagemann, Guy, to Roussel-UCLAF. Methods of combatting bacteria or fungi using 5-methyl-4,4-dichloro-5-pyrazolone. 3,786,151, Cl. 424-273.000.
Gladbach, Bergisch: *See—*
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Glaser, Harold: *See—*
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Glaser Products Corporation: *See—*
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Leming, John C.; Glassie, Donelson C.; and Jahnel, Roy M., 3,785,316.
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Gleim, William K. T.; Gatsis, John G.; and O'Hara, Mark J., to Universal Oil Products Company. Desulfurization and conversion of black oils. 3,785,958, Cl. 208-87.000.
Glenn, Mary T.: *See—*
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Glenn, Tom H.: *See—*
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Gloge, Detlef Christoph, to Bell Telephone Laboratories, Incorporated. Low dispersion optical fiber. 3,785,718, Cl. 350-96.0wg.
Godard, Gerard: *See—*
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Godfrey, Norman Bell, to Jefferson Chemical Company, Inc. Polyamine and hydrocarbon sulfonic acid accelerator combination for epoxy curing. 3,785,997, Cl. 252-426.000.
Goldman, Arnold J.: *See—*
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Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., to Lexitron Corporation, mesne. Electronic test display system which simulates a typewriter. 3,786,429, Cl. 340-172.500.
Goldstein, Arthur. Dispenser for C-folded paper towels with hot air dryer. 3,785,523, Cl. 221-42.000.
Goldsworthy Engineering, Inc.: *See—*
Karlson, Harald E., 3,785,137.
Good, Arthur L.; and Reese, Robert P., to Reese Products, Inc. Sway control device for connection between a trailer and towing vehicles. 3,785,680, Cl. 280-446.00b.
Goodrich, B. F., Company, The: *See—*
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Goodyear Aerospace Corporation: *See—*
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Gormann, Willi: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; Gormann, Willi; and Pelka, Walter, 3,785,703.
Goss, Ira D.: *See—*
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Goto, Shinji: *See—*
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Gotoh, Syuichi, to Nippon Oil Seal Industry Co., Ltd. Oil seal or sleeve having press-fitted portions coated with synthetic rubber latex. 3,785,856, Cl. 117-75.000.
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Graham, Cecil Robert Montgomery. Means for spraying liquid substances in atomised form. 3,785,536, Cl. 222-402.210.
Grand, Paul Sheldon, to Colgate-Palmolive Company. Cosmetic and textile-treating compositions. 3,785,985, Cl. 252-106.000.
Grandini, Angelo: *See—*
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Graphic Systems, Inc.: *See—*
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Gras, Elie, to Etablissements Anver S.A. Method of molding plastics to the surface of a backing material imitative of leather, fabrics and the like. 3,785,900, Cl. 156-245.000.
Graves, William P.; Passavant, Francis C.; and Worters, Allen J., to GTE Sylvania Incorporated. Television type display system for displaying waveforms of time-varying signals. 3,786,476, Cl. 340-324.00a.
Gray, Paul L. Jackhammer. 3,785,444, Cl. 173-78.000.
Green, Melvin Perry. Mechanism for forming a foundation. 3,785,606, Cl. 249-3.000.
Greene, Samuel. Swimming pool coping. 3,785,099, Cl. 52-102.000.
Greenhill, Derek Howard. Sensing and control system. 3,786,470, Cl. 340-267.00r.
Greenwood, Arthur R.: *See—*
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Gregg, David P.; and Pooley, Charles K. (said Pooley assor. to said), 3,785,268.
Gregg, David P.; and Pooley, Charles K., said Pooley assor. to said Gregg, David P. Scanning type photographic film developing system and apparatus. 3,785,268, Cl. 95-89.00r.
Gresham, Perry Thomas, to American Telephone and Telegraph Company. Toll call denial circuit. 3,786,196, Cl. 179-18.0da.
Griffith, Louis E.: *See—*
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Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.
Grill, William Augustus, to RCA Corporation. Method for depositing refractory metals. 3,785,862, Cl. 117-217.000.
Grip-Pak, Inc., mesne: *See—*
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Castrucci, Paul P.; Grochowski, Edward G.; Hess, Martin S.; Maheras, Geroge; and North, William D., 3,785,886.
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Grooteboer, Wilhelm, to Linder, Alex, GmbH. Method for the destination control of objects fed into a distributing conveying system and distributing conveying system for performing such method. 3,785,510, Cl. 214-11.00c.
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Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich. Wire-rope winding machine and method of its operation. 3,785,139, Cl. 57-58.340.
Grubb, Harold R.; and Liebschutz, Lynn C., to International Business Machines Corporation. Magnetic domain decoder/encoder device. 3,786,455, Cl. 340-174.0tf.
Gryszkiewic-Trouchimowski, Oleg: *See—*
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GTE Automatic Electric Laboratories Incorporated: *See—*
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Zelinski, Paul A.; and Jones, Leo V., 3,786,436.
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GTE Sylvania, Inc.: *See—*
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Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D., 3,785,019.
Graves, William P.; Passavant, Francis C.; and Worters, Allen J., 3,786,476.
Peltz, John R.; and Szeverenyi, Nikolaus A., 3,786,463.
Guarriello, Theodore J. Nursery pot. 3,785,088, Cl. 47-34.000.
Gulf Research & Development Company: *See—*
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Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,785,964.
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Guthans Engineering Co.: *See—*
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Guthans, Harold A., to Guthans Engineering Co. Ratchet haul devices. 3,785,324, Cl. 114-235.00a.
Guyton, David L. Method and apparatus for locating a principal meridian of an astigmatic optical system. 3,785,723, Cl. 351-34.000.
Gybowski, Frank. Game device. 3,785,656, Cl. 273-177.00a.
Gylland, Ernest F., Jr., to Westinghouse Electric Corporation. Multiple compressor refrigeration system. 3,785,169, Cl. 62-468.000.
Haas, Carl, Firma: *See—*
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Haase, Willard A.; and Wegenke, Ingwald E., to Montello Products Company. Deburring and chamfering apparatus. 3,785,742, Cl. 408-3.000.
Hachiboshi, Makoto: *See—*
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Hadbavny, Jozef; and Fuglister, Peter, to Siemens-Albis AG. Means for coupling a cavity resonator to a conductor circuit and/or a further cavity resonator. 3,786,371, Cl. 333-24.00r.
Haemonetics Corporation: *See—*
Latham, Allen, Jr., 3,785,549.
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Peterson, Francis C., 3,785,236.
Haggberg, Marvin D.; Kavanagh, Ira K.; and Van Horik, Leonard R., to McDonnell Douglas Corporation. Method of forming honeycomb panel edges. 3,785,788, Cl. 29-423.000.
Hahn & Clay: *See—*
Pechacek, Raymond E., 3,785,040.
Hahn, Ernest A.: *See—*
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,785,849.
Hajdu, Johann; Knauft, Guenter; Skuin, Petar; and Vogt, Edwin, to International Business Machines Corporation. Data processing system including a small auxiliary processor for overcoming the effects of faulty hardware. 3,786,430, Cl. 340-172.500.
Halberschmidt, Friedrich; and Audi, Josef, to Saint-Gobain. Apparatus and method for cutting glass. 3,785,229, Cl. 83-6.000.
Hall, Ralph J. Soot cleaning method. 3,785,351, Cl. 122-379.000.
Hallamore Homes Inc.:*See—*
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Hallamore, Lloyd G., to Hallamore Homes Inc. Prefabricated construction panel. 3,785,913, Cl. 161-41.000.
Hallberg, Irving H.: *See—*
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Halley, James L., to Tesco Chemicals, Inc. Waste treatment material. 3,785,971, Cl. 210-64.000.
Halliburton, Ronald D., to Allied Leisure Industries, Inc. Manually controlled electric pinball game. 3,785,650, Cl. 273-110.000.
Halliburton, Ronald D., to Allied Leisure Industries, Inc. Pinball game bumper electrically responsive to ball impact. 3,785,652, Cl. 273-127.00r.
Halliburton, Ronald D., to Allied Leisure Industries, Inc. Pinball game bumper electrically responsive to ball impact. 3,785,653, Cl. 273-127.00r.
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Hallock, Robert Warren, to Bell Telephone Laboratories, Incorporated. Reversible 2's complement to sign-magnitude converter. 3,786,490, Cl. 340-347.0dd.
Halperin, Edward B., to Perin Products Corporation. Calendar display construction with indexing calendar bearing member. 3,785,074, Cl. 40-113.000.
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Hanney, Philip Michael; Stainforth, Thomas Raymond; and Bland, William Arthur, to Bentley Engineering Company Limited, The. Tubular knitted fabric. 3,785,173, Cl. 66-9.00r.
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Harbers, Henry C., Jr.; and Harbers, Henry C., Sr., to Western Unit Corporation. Preloaded spring beam and method employed alone or in combination with air bellows spring. 3,785,673, Cl. 280-124.00f.
Harbers, Henry C., Sr.: *See—*
Harbers, Henry C., Jr.; and Harbers, Henry C., Sr., 3,785,673.

Harbottle, William L., to Timken Company, The. Method for adjusting tapered roller bearings and for assembling devices employing such bearings as journals. 3,785,023, Cl. 29-148.40a.

Harding, William R. Aquarium siphon. 3,785,493, Cl. 210-169.000.

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Kornrumpf, William P.; and Harnden, John D., Jr., 3,786,219.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including temperature sensing of inductively heated cooking vessel. 3,786,220, Cl. 219-10.490.

Harnden, John D., Jr.; and Kornrumpf, William P., to General Electric Company. Metallic foil induction cooking. 3,786,222, Cl. 219-10.490.

Harnisch, Horst, to Bayer Aktiengesellschaft. Benzoxazole compounds useful as optical brightening agents. 3,786,064, Cl. 260-307.00d.

Harper, George Sullivan, to Airpax Electronic, Inc. Multi-pole circuit breaker. 3,786,380, Cl. 335-9.000.

Harsch, Thomas B., to International Liqiut Xtal Company. Display devices utilizing liquid crystal light modulation with varying colors. 3,785,721, Cl. 350-150.000.

Hart, Walter C.; and Singh, Suman P. N., to Phillips Petroleum Company. Separation of components of vaporous fluids. 3,785,161, Cl. 62-23.000.

Harter, H. Elisabet; surviving spouse of Harter, Roy S., deceased: *See—*
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Harter, Roy: *See—*
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Hartman, Gary F., to United States of America, Navy. Digital television character generator. 3,786,481, Cl. 340-324.0ad.

Hartman, Rolf, to Rheinmetall G.m.b.H. Belt feeder for automatic firearms. 3,785,242, Cl. 89-33.0ca.

Hase, Takashi: *See—*
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Hata, Naoaki; and Takase, Yuzo, to Asahi Denka Kogyo K.K. Halogen containing polyesters and method for preparing same. 3,786,022, Cl. 260-47.00c.

Hatano, Isao; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co. Digital display system of floating point representation. 3,786,480, Cl. 340-324.00r.

Hatano, Kazunori: *See—*
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Haven, John B., to General Electric Company. Emergency trip throttle valve. 3,785,615, Cl. 251-74.000.

Haverkamp, Klaus Dieter: *See—*
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Hawker Siddeley Aviation, Limited: *See—*
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Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Light sensing device. 3,786,262, Cl. 250-206.000.

Hayashi, Toshio: *See—*
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Hayden, Rodney, to TRW Inc. Carbon monoxide alarm for automobiles. 3,786,462, Cl. 340-237.00r.

Hayden, Roy E., to SWF Plywood Company. Apparatus for laying up plywood panels. 3,785,508, Cl. 214-6.00m.

Hayes, John C., to Universal Oil Products Company. Four-step procedure for regenerating a catalyst containing platinum, rhenium and halogen. 3,785,996, Cl. 252-415.000.

Hayes-Albion: *See—*
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Hazelett, Robert William; Hazelett, Richard; and Wood, John Frederick Barry, 3,785,428.

Hazelett, Robert William; Hazelett, Richard; and Wood, John Frederick Barry, to Hazelett Strip-Casting Corporation. Wheel-belt continuous casting machine. 3,785,428, Cl. 164-278.000.

Hazelett Strip-Casting Corporation: *See—*
Hazelett, Robert William; Hazelett, Richard; and Wood, John Frederick Barry, 3,785,428.

Hazelhurst, Gerald D., to Mark Products, Inc. Seismic cable assembly. 3,786,410, Cl. 340-17.000.

Hebbecker, Rolf; and Hofmann, Robert, to Fouquet-Werk Frauz & Planck. Thread supply apparatus for textile machinery, particularly circular knitting machines. 3,785,176, Cl. 66-132.0st.

Heberlein & Co., AG: *See—*
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Heinrich, Karl: *See—*
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Heinzman, Arthur H.; Clifton, Henry G., Jr.; and Theobald, Robert A. Jig for precasting a plurality of panels. 3,785,608, Cl. 249-161.000.

Heisner, Donald N., to Addressograph-Multigraph Corporation. Optical reader. 3,786,238, Cl. 235-61.11e.

Helmrich, Ralph, to Diamond Aerosol Corporation. Aerosol grenade. 3,785,569, Cl. 239-337.000.

Heneghan, Leo F.: *See—*
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Henes, Richard W.: *See—*
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Henkel & Cie G.m.b.H.: *See—*
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Hennig, Arnold; and Hennig, Kurt. Cover for machine tools. 3,785,418, Cl. 150-52.00r.

Hennig, Kurt: *See—*
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Henriksson, Sten Tycho, to Boliden Aktiebolag. Method of producing arsenic selenides and arsenic doped selenium. 3,785,806, Cl. 75-134.00h.

Hepner, Georges; Lacombat, Michel; and Marcy, Raymond, to Compagnie Francaise Thomson Houston-Hotchkiss Brandt. Micro positioning apparatus. 3,786,332, Cl. 318-577.000.

Herbert, Jean Jacques. Apparatus for treating water charged with scale forming substances. 3,785,954, Cl. 204-228.000.

Herbots, Joseph Antoine: *See—*
von Paesschen, August Jean; Herbots, Joseph Antoine; and Timmerman, Daniel Maurice, 3,786,002.

Hergert, Heinz, to Polrotor, Inc. Apparatus for producing patterned pile fabrics. 3,785,016, Cl. 26-2.00r.

Herkt, Karl-Heinz: *See—*
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Hermann Finckh Metalltuch- und Maschinenfabrik: *See—*
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Hershberger, J. Ronald: *See—*
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Hervert, George L.; Carnahan, Robert D.; and Youtsey, Karl J., to Universal Oil Products Company. Apparatus for catalytically converting fluids. 3,785,781, Cl. 23-288.00f.

Hess, Martin S.: *See—*
Castrucci, Paul P.; Grochowski, Edward G.; Hess, Martin S.; Maheras, Geroge; and North, William D., 3,785,886.

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Hesston Corporation: *See—*
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Hetherington, Irvine Keers; Pritchett, Robert Leonard; and York, Robert Kenneth, to Bell Telephone Laboratories, Incorporated. Integrated circuit switching network providing crosspoint gain. 3,786,425, Cl. 340-166.00r.

Heywang, Hermann; and Hoyler, Gerhard, to Siemens Aktiengesellschaft. Method for producing strips of insulating material having electrically conductive coatings with a coating free marginal edge surface. 3,786,224, Cl. 219-121.01m.

Hickman, Robert Winfield, to Du Pont de Nemours, E. I., and Company. Composite filament with elastomeric core and micro-apertured polypropylene foam sheath and process therefor. 3,785,919, Cl. 161-175.000.

Hider, Theodore M.; Hawn, Frank A.; and Makie, George E., to International Business Machines Corporation. Methods for developing electrostatic images. 3,785,846, Cl. 117-17.500.

Higashide, Eiji: *See—*
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Hilburn, Hugh C., to Sperry Rand Corporation. Cathode ray tube dual mode horizontal deflection control amplifier. 3,786,303, Cl. 315-27.0td.

Hildebrand, Dietrich; and Kuth, Robert, to Bayer Aktiengesellschaft. Process for the continuous dyeing and printing of fibre materials containing ionic groups. 3,785,767, Cl. 8-54.000.

Hill, Elgie E. Chord-teaching device for a stringed instrument. 3,785,240, Cl. 84-485.000.

Hill, Michael Walter, to RCA Corporation. Dynamic convergence circuits. 3,786,300, Cl. 315-13.00c.

Hillhouse, John L.: *See—*
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Hinai, Masakatsu: *See—*
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Hino, Mikoni; Hanawa, Shozo; Itaya, Hisso; Okada, Toshihiko; and Fujtwara, Masayuki, to Gunze, Co., Ltd. Device for sensing a broken yarn of a circular knitting machine. 3,785,177, Cl. 66-157.000.

Hintenberger, Karl. Vacuum oven for firing ceramic facings. 3,786,164, Cl. 13-31.000.

Hiraishi, Kiyoto: *See—*
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Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, to Sumitomo Chemical Company, Limited. N-allyl phosphorothiamidates. 3,786,118, Cl. 260-948.000.

Hiraoka, Susumu: *See—*
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Hitachi, Ltd.: *See—*
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Hitchman, Michael L.; Mehl, Wolfgang; and Millot, Jean Pierre, to Wright, H. Dudley. Electrochemical oxygen detector. 3,785,948, Cl. 204-195.00p.

Ho, Irving T.; and Riseman, Jacob, to International Business Machines Corporation. Integrated magnetic bubble and semiconductor device. 3,786,445, Cl. 340-174.0tf.

Hoang, Ming-Tsung: *See—*
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Hobson, Charles F., Jr.; and Willard, Henry G., to General Electric Company. Circuit breaker and static trip circuit therefor. 3,786,311, Cl. 317-18.00d.

Hochman, Herschel T.; and Hogan, Dennis L. Security maintenance system. 3,786,471, Cl. 340-274.000.

Hock, Fromund; Feldmann, Hennig; and Fialkowski, Heinz, to Leitz, Ernst, G.m.b.H. Split-field micioscope. 3,785,714, Cl. 350-15.000.

Hodges, Franklin Reeder. Medical testing and data recording apparatus. 3,786,510, Cl. 346-33.0me.

Hodges, Frederick R. Method for forming a drinking receptacle. 3,785,794, Cl. 65-108.000.

Hodgkins, David H., to Stanadyne, Inc. Water separator. 3,785,970, Cl. 210-23.000.

Hodkin, Thomas W. Magnetic writing instrument. 3,785,739, Cl. 401-195.000.

Hodshire, James O.; Shockley, Quentin O.; and Crouse, Don E., to General Motors Corporation. Solid surface lubricant coating. 3,785,785, Cl. 29-195.00y.

Hoekstra, James, to Universal Oil Products Company. Method of catalyst manufacture by impregnating honeycomb-type support. 3,785,998, Cl. 252-477.00r.

Hoening, Kevin J., to Seaquist Valve Company. Mechanical breakup aerosol sprayer button. 3,785,571, Cl. 239-492.000.

Hoesch Aktiengesellschaft: *See—*
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Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. N,N-dimethyl-O-substituted-3,4-poly methylene-pyrazolyl. 3,786,065, Cl. 260-310.00r.

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Hogan, Elmer R.; and Simpson, John I., to Smith-Bergen Manufacturing Corporation. Fish-cleaning apparatus. 3,785,007, Cl. 17-59.000.

Hogshead, Thomas H., Jr.: *See—*
Peet, Robert G.; Foster, Henry O.; Paulsell, Kenneth G.; and Hogshead, Thomas H., Jr., 3,786,127.

Holl, William H., to General Motors Corporation. Exhaust gas recirculation system. 3,785,151, Cl. 60-277.000.

Holland, Dewey G.: *See—*
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Holland, Melvin G.: *See—*
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Holmes, Jerry D.: *See—*
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Holmstrom, Goran, to Allmanna Svenska Elecktriska Artiebolaget. Electric switching device combining insulating parts comprising an acrylate resin binder. 3,786,213, Cl. 200-144.00c.

Holz, Emil, to Hermann Finckh Metalltuch- und Maschinenfabrik. Pressure filter for fibrous suspensions. 3,785,495, Cl. 210-210.000.

Holzhauer, Rudolf, to Ruggeberg, August, Firma. Abrasive medium. 3,785,094, Cl. 51-401.000.

Hombrecher, Friedrich, to ERSA Ernst Scahs KG. Thermostatically controlled electric soldering iron. 3,786,229, Cl. 219-241.000.

Homma, Isamu: *See—*
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Homoi, Toshimitu; and Homma, Isamu, to Hitachi, Ltd. Semiconductor device having channel preventing structure. 3,786,318, Cl. 317-235.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honeywell Inc.: *See—*
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Woods, William E., 3,786,432.

Honeywell Information Systems Italia: *See—*
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Honnen, Lewis R.; and Coon, Marvin D., to Chevron Research Company. Fuel detergents. 3,785,789, Cl. 44-66.000.

Hopkins, Henry R. Portable debris incinerator. 3,785,303, Cl. 110-8.00r.

Hopkins, Stephen, to Compackager Corporation. Machine for compacting trash. 3,785,278, Cl. 100-51.000.

Hoppke, Jerell B., to Buckbee-Mears Company. Multi-angle beam director for testing aperture masks. 3,785,738, Cl. 356-138.000.

Hopps, Harvey Byron; and Biel, John Hans, to Aldrick Chemical Company, Inc. Monosulfate salt of 3-ethyl-6,7-dihydro-2-methyls-5 (4',4'-ethylene dioxypiperidina-methyl)-indole-4-(5H)-one. 3,786,057, Cl. 260-293.610.

Horai, John C.; and Tucker, Stephen F., to GAF Corporation. Biologically active particulate material and the process for manufacturing same. 3,785,798, Cl. 71-79.000.

Horecky, Stanley V., to Molex Inc. Electrical terminal. 3,786,402, Cl. 339-276.00a.

Hori, Yasuro; Hiraishi, Kiyoto; Kiuchi, Tadashi; and Kashima, Yoshitake, to Hitachi, Ltd. Short-circuit testing model for stationary induction apparatuses. 3,786,387, Cl. 336-181.000.

Horikawa, Hideichi: *See—*
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Horizons Incorporated: *See—*
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Horner, Joseph L.; and Plank, Gordon R., to United States of America, Transportation. Non-contacting angular position detector. 3,786,458, Cl. 340-196.000.

Hornle, Reinhold: *See—*
Molls, Hans-Heinz; Hornle, Reinhold; Bucheler, Manfred; Raab, Hans; and Adrio, Joachim, 3,785,969.

Hoscot Limited: *See—*
Watson, Robert E.; and Pitts, Claude L., 3,784,991.

Hoskins, Leonard Maxwell, to National Research Development Corporation. Preparation of mixes. 3,785,621, Cl. 259-102.000.

Hotten, Bruce W., to Chevron Research Company. Rust inhibiting lubrication oil additives. 3,785,981, Cl. 9-29-71.

Houghton, Paul: *See—*
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Householder, Kermit W.; and Doesburg, Van I., to Dow Corning Corporation. Distillation process of monomers with the addition of an antifoam composition. 3,785,935, Cl. 203-20.000.

Housman, Richard J.: *See—*
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Houston Company, The: *See—*
Houston, Edward F.; Wallace, Robert L.; Rochette, William; and Chaponis, Charles A., 3,786,207.

Houston, Edward F.; Wallace, Robert L.; Rochette, William; and Chaponis, Charles A., to Houston Company, The. Electrical switch assembly and valve for liquid filling system. 3,786,207, Cl. 200-61.860.

Howell, Frederick Harold, to Geigy, J. R., A.G. Process for the preparation of cyclodecanone. 3,786,099, Cl. 260-586.00a.

Howorth, Jonathan Ross, to English Electric Company, Limited. Evacuated electron discharge tubes. 3,786,296, Cl. 313-176.000.

Hoya Glass Works, Ltd.: *See—*
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Hoyler, Gerhard: *See—*
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Hruby, John O., Jr., to Rain Jet Corporation. Axial flow fountain base. 3,785,559, Cl. 239-17.000.

Hruby, John O., Jr., to Rain Jet Corporation. Nozzle for discharging liquids containing solid matter. 3,785,560, Cl. 239-17.000.

Hsu, Grace F., to Conversion Chemical Corporation. Tin/lead plating bath and method. 3,785,939, Cl. 204-43.00s.

Huber, Ernst: *See—*
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Huber, Max, to Sulzer Brothers Limited. Mixing apparatus and method. 3,785,620, Cl. 259-4.000.

Hubner, Hans-Hugo: *See—*
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Hubner, Klaus, to Siemens Aktiengesellschaft. Starting circuit for a synchronous machine having an electronic commutator. 3,786,326, Cl. 318-138.000.
Hudgin, Donald Edward: *See—*
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Hudson, Charles D., to Wyckoff Company. Process of treating wood. 3,785,770, Cl. 21-7.000.
Huffaker, James E.; Myers, Ernest L.; Dillon, Brian D.; and Dolen, Cecil W., to Eastman Kodak Company. Method of fabricating continuous product from molded sections. 3,785,039, Cl. 29-428.000.
Hughes Aircraft Company: *See—*
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., 3,786,506.
Long, Willis F., 3,786,310.
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Huh, Nam. Bottle caps. 3,785,519, Cl. 215-46.00a.
Huhn, Horst, to Studiengesellschaft Kohle mbH. Apparatus for carrying out chemical reactions, with formation of photoreaction precipitations. 3,786,250, Cl. 250-429.000.
Hull Corporation: *See—*
Jennings, Thomas A., 3,785,046.
Humphlett, Wilbert J.: *See—*
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Humphrey, Earl L.; and Morse, William B., to Gulf Research & Development Company. Vapor space inhibited turbine oil. 3,785,975, Cl. 252-32.500.
Hunt, Mack W., to Continental Oil Company. Process for producing anionic metal-containing sulfonates. 3,785,976, Cl. 252-33.000.
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Hunter, John P., Jr.; Norton, Ross Erle; and Mitchell, William O., to Oxford Industries, Inc. Cuff making system. 3,785,307, Cl. 112-121.270.
Hunter, Leon, to Shell Oil Company. Liquid detergent compositions. 3,786,003, Cl. 252-551.000.
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Hunziker, Paul J.: *See—*
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Hurd, Calvin F., Jr. Vehicle anti-collision system. 3,786,507, Cl. 343-7.0ed.
Hussain, Anwar, to Interx Research Corporation. Alkoxyacetanilide compounds. 3,786,090, Cl. 260-562.00a.
Hutchins, Alma A. Abrading tool having suction system for collecting abraded particles. 3,785,092, Cl. 51-170.0mt.
Hutchinson, Carl P., to Wilson Industries, Inc. Tool for use in removing a fish stuck within a well bore. 3,785,690, Cl. 294-86.340.
Hutter, Charles G., III, to Physical Systems, Inc. Surgical lamp. 3,786,244, Cl. 240-1.400.
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Hyldon, Roy G., to Quaker Oats Company, The. Doctor blade for controlling bulk density of dehydrated cereal products. 3,785,425, Cl. 159-11.000.
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Iarossi, Frank J.; and Cowles, Walter C., to Esso Research and Engineering Company. Docking and drydocking members for externally insulated ships. 3,785,318, Cl. 114-74.00a.
Ichikawa, Masahide. Brine battery. 3,785,871, Cl. 136-100.00m.
Ichiki, Eiichi; Iida, Kazuo; Matsui, Atsuro; and Kadokura, Hidekimi, to Sumitomo Chemical Company, Limited. Continuous process for producing alkylaluminum compounds. 3,786,080, Cl. 260-448.00a.
Ichinosawa, Toshiju: *See—*
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Ide, Fumio; Kodama, Tsuneu; and Kotake, Yahide, to Mitsubishi Rayon Co., Ltd. and Nitto Kagyo Co. Ltd. Paper reinforcing composition containing starch and a starch-acrylamide graft polymer. 3,785,921, Cl. 162-168.000.
Igonin, Nikolai Ivanovich: *See—*
Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich, 3,785,869.
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Iida, Hiroshi, to Sansui Electric Co., Ltd. Delay circuit for providing a variable delay characteristic. 3,786,283, Cl. 307-293.000.
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Ikeda, Hisao, to Matsushita Electric Industrial Co., Ltd. Cassette-type magnetic tape recording and reproducing apparatus. 3,785,658, Cl. 274-4.00c.
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Inoue, Eiichi; Shimizu, Isamu; Endo, Ichiro; and Kobayashi, Hajime, to Canon Camera Kabushiki Kaisha. Photorecording process and photorecording member. 3,785,820, Cl. 96-48.00r.
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Inque, Goro; and Hoang, Ming-Tsung, to Nippondenso Co., Ltd. Automatic windshield wiping apparatus by using microwaves for vehicles. 3,786,330, Cl. 318-483.000.
Inque, Masayoshi; Nagai, Koji; and Kitaguchi, Shigeo, to Minolta Camera Kabushiki Kaisha. Method of producing a liquid developer for use in the electronic photography. 3,785,983, Cl. 252-62.100.
Intel Corporation, mesne: *See—*
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Iwama, Masakuni; Yamamoto, Toshihiko; Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 3,785,828, Cl. 96-100.000.

Iwamoto, Hidenori: *See—*
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Izumitani, Tetsuro; and Masuda, Isao, to Hoya Glass Works, Ltd. Anomalous dispersion glass. 3,785,835, Cl. 106-47.00q.

Jachertz, Dietrer. Process for the enzymatic reproduction of informationally active RNA. 3,785,926, Cl. 195-28.00n.

Jackes-Evans Manufacturing Company, mesne: *See—*
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Jackowitz, Edward C. Inventory control apparatus and method. 3,785,681, Cl. 283-55.000.

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Jackson, Jack M.; and Hartfiel, Arlynn H., to Chemical Additives Company. Methods for minimizing fluid loss of wellbore fluids. 3,785,438, Cl. 166-295.000.

Jackson, John M., to Armco Steel Corporation. Cube-on-edge oriented silicon-iron having improved magnetic properties and method for making same. 3,785,882, Cl. 148-113.000.

Jacob, Ingolf; Buttner, Gert; and Heinrich, Karl, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Equipment for the continuous crimp development of three-dimensionally crimped synthetic fibers and filaments. 3,785,017, Cl. 28-1.20.

Jacobs, James W., to General Motors Corporation. Clutch device. 3,785,220, Cl. 74-242.1fp.

Jacobs, Melvin A.; and Lee, David Q., to GTE Automatic Electric Laboratories Incorporated. Preference circuit for a marker. 3,786,197, Cl. 179-18.0ed.

Jacobs, Stanley C., to Aluminum Company of America. Refractory for production of aluminum by electrolysis of aluminum chloride. 3,785,941, Cl. 204-67.000.

Jaecklin, Andre; and Strassler, Siegfried, to Brown, Boveri & Company, Ltd. Holder member for a disc-shaped semiconductor element. 3,786,168, Cl. 174-15.00r.

Jaget, Jean; deceased (by Jaget, Pierre). Method and apparatus for incinerating refuse. 3,785,306, Cl. 110-14.000.

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James, Bruce A.; Lawless, Michael J.; and Clark, David L., to General Motors Corporation. Closure latch arrangement. 3,785,186, Cl. 70-240.000.

Jamison, Will B., to Consolidated Coal Company. Fire alarm device. 3,786,461, Cl. 340-227.100.

Jankowski, Alfred S.; Moll, John L.; and Funk, Ernest J., to Fairchild Camera and Instrument Corporation. Alpha-numeric display package. 3,786,499, Cl. 340-378.00r.

Japan Exlan Company Limited: *See—*
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Japan Gasoline Co., Ltd.: *See—*
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Japan Synthetic Rubber Co., Ltd.: *See—*
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Jaquiss, Donald B. G.; and Liberti, Frank N., to General Electric Company. Thermally stable flame retardant polycarbonate composition containing in admixture a polycarbonate and a phosphinic or a phosphoric acid additive. 3,786,114, Cl. 1-3-72.

Jauvtis, Harvey I., to Cambridge Memories, Inc. Magnetic thin film shift register having bidirectional transmission elements and offset block sites. 3,786,449, Cl. 340-174.0fb.

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Jenkins, Thomas E., to General Electric Company. Sealing system for washing machine. 3,785,566, Cl. 239-259.000.

Jenkinson, William David; and Marke, Paul Anthony Bryant, to Texaco Inc. Method and apparatus for offshore geophysical exploration with low power seismic source. 3,786,408, Cl. 340-15.5mc.

Jennings, James Robert; and Simon, David Gavin, to Imperial Chemical Industries, Limited. Vinyl polymerisation. 3,786,032, Cl. 260-91.700.

Jennings, Thomas A., to Hull Corporation. Thin film coils and method and apparatus for making the same. 3,785,046, Cl. 29-602.000.

Jensen, Norman P.: *See—*
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Jerchel, Dietrich: *See—*
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Joachim Erbprinz Zu Foustenberg: *See—*
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Joannou, Constantinos J. Phonograph record player turntable and motor assembly. 3,786,288, Cl. 310-68.000.

Johannessen, Paul R., to Mesapulse Incorporated. Magnetic pulse compression radio-frequency generator apparatus. 3,786,334, Cl. 321-45.00r.

Johansen, Thor H. Method of treating raw cellulosic materials. 3,785,920, Cl. 162-19.000.

Johansson, Rolf Anders Gunnar. Centrifugal clutches in series with brake. 3,785,465, Cl. 192-48.500.

Johns-Manville Corporation: *See—*
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Johnson, B. Neil; and Midthun, Robert A. Machine for forming a continuous seamless concrete pipe. 3,785,759, Cl. 425-59.000.

Johnson, Benjamin A.: *See—*
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Johnson, Bernard Lee. Spare tire carrier. 3,785,518, Cl. 214-454.000.

Johnson, David E., to Mobil Oil Corporation. Apparatus for extrusion of thermoplastics. 3,785,760, Cl. 425-207.000.

Johnson, James E., to Construction Machinery Company. Mounting device for mobile concrete mixing drum. 3,785,622, Cl. 259-176.000.

Johnson, Robert J.: *See—*
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Johnson, William H., to Research Corporation. Tobacco treatment to increase volume thereof. 3,785,385, Cl. 131-140.00p.

Jojima, Takehiko: *See—*
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Jones, Arthur L., to Standard Oil Company, The. Olefin conversion process. 3,786,109, Cl. 260-673.000.

Jones, Bryan: *See—*
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Jones, Cecil R., to Transfer Systems Incorporated. Portable radiation shield for nuclear reactor installation. 3,785,925, Cl. 176-87.000.

Jones, Chesley; and Poupitch, Ougljesa Jules, to Illinois Tool Works, Inc. Contact socket. 3,786,401, Cl. 339-258.00r.

Jones, James W., to Compac Engineering, Inc. Reed switching assembly of deformable material. 3,786,384, Cl. 335-152.000.

Jones, John Leslie, Sr. Composition applicator. 3,784,998, Cl. 15-209.00r.

Jones, Leo V.: *See—*
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Jonnes, Nelson, to Minnesota Mining & Manufacturing Company. Roadway lane delineator having an elastomeric reflective portion. 3,785,719, Cl. 350-105.000.

Jonnet, Albert G.: *See—*
Edgar, William D.; and Jonnet, Albert G., 3,785,933.

Jordan, John D., to General Electric Company. Damping circuit for vertical deflection system. 3,786,304, Cl. 315-27.0td.

Jorgensen, Soren. Plant, preferably for anaesthesia. 3,785,377, Cl. 128-188.000.

Joy, David Charles; and Booker, Graham Roger, to Cambridge Scientific Instruments, Limited. Electron microscopes and microanalysers. 3,786,271, Cl. 250-398.000.

Joy, Edward, to Ventrola Manufacturing Company. Low profile ventilator apparatus means. 3,785,271, Cl. 98-40.0dc.

Juculano, Charles T., to Symons Corporation. Toeboard clamp for steel scaffolding. 3,785,602, Cl. 248-214.000.

Judge, Roderick B.: *See—*
Skov, Ebbe R.; Judge, Roderick B.; and Hamphill, Geoffrey, 3,786,086.

Judin, Valentin Dmitrievich: *See—*
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.

Junck, John A.; and Kokaly, Joseph, to Caterpillar Tractor Company. Hydraulic control for self-loading scraper with three-speed elevator drive. 3,785,156, Cl. 60-421.000.

Junginger, Klaus: *See—*
Blzig, Karl F.; and Junginger, Klaus, 3,786,243.

Jvirblis, Alex E.; and Roth, Walter, to Diagnostic Instruments, Inc. Field control in imaging systems. 3,786,252, Cl. 250-315.000.

Kabat, John L.; Magnussen, John L.; Porter, Richard B.; and Tobias, James R., to Honeywell Inc. Electronic control circuit with time delay of main and feedback signals. 3,785,432, Cl. 165-22.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Sato, Yukihiro; and Ichinosawa, Toshiju, 3,786,236.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Suzuki, Mitsuaki, 3,785,450.

Kabushiki Kaisha Osaka Jack Seisakusho: *See—*
Une, Tatuyuki; and Kamata, Akira, 3,785,030.

Kabushiki Kaisha Suwa Seikosha: *See—*
Fujimori, Yoshiaki, 3,785,143.
Kegami, Toshimasa, 3,785,141.

Kabushiki-Kaisha Kubo Shoten: *See—*
Kubo, Shirohei, 3,785,700.

Kadokura, Hidekimi: *See—*
Ichiki, Eiichi; Iida, Kazuo; Matsui, Atsuro; and Kadokura, Hidekimi, 3,786,080.

Kadono, Takeji: *See—*
Inamoto, Yoshiaki; and Kadono, Takeji, 3,786,033.

Kaffarnik, Hans: *See—*
Moyer-Bertenrath, Jurgen; Kaffarnik, Hans; Rey, Hans-Georg; Michal, Gerhard; and Busch, Ernst-Werner, 3,786,140.

Kagele, Frank L.: *See—*
Trent, Edward J.; Meyers, Lavern H.; and Kagele, Frank L., 3,786,234.

Kahn, Michael E., to Memorex. Disk recorder arm assembly mount. 3,786,457, Cl. 340-174.10c.

Kaiser Aluminum & Chemical Corporation: *See—*
Gibbs, Francis E., 3,786,225.

Kajimoto, Hikokusu: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

Kali-Chemie Aktiengesellschaft: *See—*
Derleth, Helmut; and Fischer, Hermann, 3,785,999.

Kalil, James, to Du Pont de Nemours, E. I., and Company. Antiozonant-antioxidant composition containing secondary amino and hydrous calcium silicate. 3,785,995, Cl. 252-400.00r.

Kaltenbach, Pierre. Light detection monitoring device. 3,786,460, Cl. 340-227.00r.

Kamata, Akira: *See—*
Une, Tatuyuki; and Kamata, Akira, 3,785,030.

Kamelander, Ivan, to Zdarske strojirny a slevarny, Narodni podnik Zdar Nad. Mechanical press with toggle lever crank drive. 3,785,282, Cl. 100-257.000.

Kamentsky, Louis A.: *See—*
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,785,735.

Kamm, Walter E. Landscape kit. 3,785,065, Cl. 35-16.000.

Kamp, Heinz, to Schlafhorst, W., & Co. Apparatus for inserting weft thread bunches into weft thread storage devices in warp knitting machines. 3,785,175, Cl. 66-84.00a.

Kanamaru, Hisanobu; Ohuchi, Yasushi; and Tatsumi, Hideo, to Hitachi, Ltd. Slip ring assembly and method of making same. 3,785,049, Cl. 29-629.000.

Kaneko, Masahiko; Miyama, Hiroshi; and Nishida, Jun, to Matsushita Electric Industrial Company. Frame-by-frame video image recording apparatus. 3,786,182, Cl. 178-6.70a.

Kano, Gota; Fujiwara, Shohei; Iizuka, Mutsuo; Hasegawa, Hiromasa; and Sawaki, Tsukasa, to Matsushita Electronics Corporation. Schottky barrier pressure sensitive semiconductor device with air space around periphery of metal semiconductor junction. 3,786,32, Cl. 317-235.00r.

Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; and Kadono, Takeji, 3,786,033.

Kaprer, Friedrich, to Ciba-Geigy AG. N,N-diallyl-3,7,11-trimethyl-2,6,10-dodecatrienylamine. 3,786,097, Cl. 260-583.00h.

Karev, Viktor Dmitrievich: *See—*
Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich, 3,785,869.

Karkutt, Reimund: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; Gormann, Willi; and Pelka, Walter, 3,785,703.

Karlson, Harald E., to Goldsworthy Engineering, Inc. Apparatus and method for producing no-twist center-pull roving packages. 3,785,137, Cl. 57-71.000.

Karlsson, Gosta, to Allmanna Svenska Elektriska Aktiebolaget. Means for atomizing molten metal. 3,785,633, Cl. 266-34.00v.

Karlsson, Kurt: *See—*
Pettersson, Birger; and Karlsson, Kurt, 3,785,431.

Karmanovsky, Stanislav Nikandrovich: *See—*
Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich, 3,785,869.

Kasama, Ryoji: *See—*
Naito, Shotaro; Kasama, Ryoji; and Sato, Hiro, 3,786,466.

Kasano, Kazuhiko: *See—*
Fujii, Heihachi; Kasano, Kazuhiko; Matsuno, Minoru; Moroi, Tadahiko; and Kitamura, Munehiro, 3,786,295.

Kashima, Yoshitake: *See—*
Hori, Yasuro; Hiraishi, Kiyoto; Kiuchi, Tadashi; and Kashima, Yoshitake, 3,786,387.

Kashio, Toshio, to Casio Computer Co., Ltd. Deflection electrode device for an ink jet printing apparatus. 3,786,516, Cl. 346-75.000.

Kassel, Joseph B. Tire puncture repair system. 3,785,896, Cl. 156-97.000.

Katayama, Shitomi; Horikawa, Hideichi; Obuchi, Masao; and Ito, Yoshihiro, to Denki Onkyo Co., Ltd. Polyamideurethanes and their preparation. 3,786,031, Cl. 260-77.5aq.

Katcher, Emanuel E., to United States of America, Navy. Integral thrust neutralizer for rocket engines. 3,785,150, Cl. 60-229.000.

Katkov, Alexandr Fedorovich: *See—*
Pukhov, Georgy Evgenievich; Borkovsky, Boris Adamovich; Belik, Viktor Kirillovich; Romantsov, Vladimir Petrovich; and Katkov, Alexandr Fedorovich, 3,786,241.

Katsutoshi, Nakayama: *See—*
Yasuhiro, Tomita; and Katsutoshi, Nakayama, 3,785,195.

Katzen, Sol. Method for stabilizing and preserving nutrients and products. 3,786,123, Cl. 264-53.000.

Kavanagh, Ira K.: *See—*
Haggberg, Marvin D.; Kavanagh, Ira K.; and Van Horik, Leonard R., 3,785,788.

Kavick, Edward M.: *See—*
Whitledge, Jon K.; and Kavick, Edward M., 3,785,050.

Kawa, Ryuichi, to Ricoh Company, Ltd. System for demodulating pulse-number-modulated binary signals. 3,786,360, Cl. 329-104.000.

Kawabata, Hidetsugu: *See—*
Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsugu; and Kitamura, Saburo, 3,786,254.

Kawabe, Tadashi, to Tateho Kagakukogyo Kabushiki Kaisha. Method of manufacturing fused magnesia. 3,786,129, Cl. 423-170.000.

Kawahara, Shigemi: *See—*

Murakami, Masuo; Kawahara, Shigemi; Inukai, Noriyoshi; Nagand, Noriaki; Iwamoto, Hidenori; and Ida, Hisashi, 3,786,054.

Kawai, Atsushi; Suzuki, Migaku; and Ohta, Hidenori, to Mitsubishi Rayon Co., Ltd. Regenerated cellulose fibrous product. 3,785,918, Cl. 161-169.000.

Kawai, Yoichi: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

Kawano, Toshio, to Onoda Cement Co., Ltd. Expansive cement additives and process for producing the same. 3,785,844, Cl. 106-314.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Ogawa, Heisuke; Yamamoto, Mitsuo; Bando, Seiisaku; and Baba, Osami, 3,786,407.

Kay, Edward Leo: *See—*
Lohr, Delmar F., Jr.; and Kay, Edward Leo, 3,786,009.

Kay-Cee Industrial Products, Inc.: *See—*
Canepa, William P., 3,785,014.

Kearney, James F., to Teletype Corporation. Teleprinter assembly. 3,785,283, Cl. 101-93.00c.

Keats, Richard L.; and Glaser, Harold, to Glaser Products Corporation. Barbecue cooker. 3,785,275, Cl. 99-446.000.

Kegami, Toshimasa, to Kabushiki Kaisha Suwa Seikosha. Mechanism for a timepiece having a plurality of time display. 3,785,141, Cl. 58-42.500.

Keio Giken Kogiyo Kabushiki Kaisha: *See—*
Mieda, Fumio, 3,786,166.

Kelch, Heinz: *See—*
Zimmermann, Hans; Schuh, Eduard; and Kelch, Heinz, 3,786,513.

Keller, Joseph H., Jr., to Kidde, Walter, & Company, Inc., mesne. Side stowable jib for crane booms and jib mounting. 3,785,505, Cl. 212-144.000.

Keller, Martin B., to Sandy Hill Corporation. Inclined former. 3,785,922, Cl. 162-299.000.

Kelly, Robert C., to Upjohn Company, The. An intermediate in the total synthesis of elenolic acid. 3,786,068, Cl. 260-340.500.

Kelseaux, Ray M.; Dobbs, Harold J.; and Priebe, Frank D., to Cities Serivce Oil Company. Electronic supervisory control system for drilling wells. 3,785,202, Cl. 73-151.500.

Kemmer, Harry P.; and Storcel, Joseph A., to Bunker Ramo Corporation. Electrical connector with locking device. 3,786,396, Cl. 339-89.00r.

Kemnitz, Robert H., to Allis-Chalmers Corporation. Feed distributor for crusher. 3,785,578, Cl. 241-202.000.

Kennard, Harry M.: *See—*
Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalez, Roger A.; and Smith, John A., 3,785,533.

Kennedy, John B.; and Pepper, Kenneth L., to Glober Tool and Engineering Company. Wire guides for armature winding machines. 3,785,580, Cl. 242-7.05b.

Kennelly, Cleve F. Bicycle rack. 3,785,500, Cl. 211-5.000.

Kent, George, Limited: *See—*
Notley, John Percy William; and Noble, James Simon, 3,786,433.

Kerr, William J., to Chicago Lock Co. Keeper lock for a slide fastener. 3,785,185, Cl. 70-68.000.

Kerruish, Kermit D. Vtol aircraft. 3,785,592, Cl. 244-12.00c.

Kersteter, Ammon W., to Equitable Equipment Company, Inc. Hatch cover. 3,785,322, Cl. 114-201.00r.

Kery, Edmund. Air bed. 3,784,994, Cl. 5-348.000.

Kessler, Milton. Bacteriological titration tray. 3,785,928, Cl. 195-140.000.

Ketterer, Stanley J., to Singer Company, The. Thread tensioning mechanism for a sewing machine. 3,785,309, Cl. 112-254.000.

Ketteringham, John M.: *See—*
Newton, Emerson H.; Ketteringham, John M.; Sienczyk, John L.; and Isaacson, Calvin M., 3,785,950.

Kidd, Donald D.: *See—*
Bowling, Glenn W.; and Kidd, Donald D., 3,785,022.

Kidde, Walter, & Company, Inc., mesne: *See—*
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Kienzle Apparate GmbH: *See—*
Zimmermann, Hans; Schuh, Eduard; and Kelch, Heinz, 3,786,513.

Kim Lighting, Inc.: *See—*
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Kimata, Shizuo: *See—*
Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Sekiya, Hitoshi; Matuo, Hiroto; and Kimata, Shizuo, 3,785,946.

Kindler, Horst: *See—*
Schmidt, Ewald; Brachet, Hansvilli Von; Muller, Rolf; and Kindler, Horst, 3,786,083.

King, Harry A. Structural material and means and method for making it. 3,785,914, Cl. 161-133.000.

King, Larry K.; Knapp, Lester L.; Schoener, Ronald C.; Kloap, Nicholas; Starner, Bernard M.; and Remper, John A., to Aluminum Company of America. Recovery of solid selectively constituted high purity aluminum chloride from hot gaseous effluent. 3,786,135, I. 423-446.000.

King, Paul Allen, Jr., to Massachusetts Institute of Technology. Cathode ray tube presentation of characters in matrix form from stored data augmented by interpolation. 3,786,478, Cl. 340-324.0ad.

King, William J., to Alpha Industries, Inc. Ion accelerator and ion species selector. 3,786,359, Cl. 328-233.000.

Kinley, John C.: *See—*
Kinley, Myron M.; and Agee, Charles W., 3,785,193.

Kinley, Myron M.; and Agee, Charles W., to Kinley, John C. Liner expanding apparatus. 3,785,193, Cl. 72-393.000.

Kirimura, Jiro: *See—*
Ariyoshi, Yasuo; Nagao, Masanori; Sato, Naotake; Shimizu, Akira; and Kirimura, Jiro, 3,786,039.

Kirk, Colin John, to Martonair Limited. Fluid logic circuit. 3,785,403, Cl. 137-608.000.

Kirk, Gregory H.: *See—*
Kitchen, Elwyn L., Jr.; and Kirk, Gregory H., 3,785,601.

Kirkman, Earl L.; and Bowers, Gerald M., to Unicorp, Incorporated. Continuous deposition reactor. 3,785,853, Cl. 117-106.000.

Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. O-(methycyclohexyl)-5-methyl-0-(2-cyanophenyl) thiolphosphates. 3,786,117, Cl. 260-940.000.

Kitaguchi, Shigeo: *See—*
Inque, Masayoshi; Nagai, Koji; and Kitaguchi, Shigeo, 3,785,983.

Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Daylight and flash photography changeover electrically-operated shutter. 3,785,259, Cl. 95-10.0ct.

Kitamura, Munehiro: *See—*
Fujii, Heihachi; Kasano, Kazuhiko; Matsuno, Minoru; Moroi, Tadahiko; and Kitamura, Munehiro, 3,786,295.

Kitamura, Saburo: *See—*
Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsugu; and Kitamura, Saburo, 3,786,254.

Kitchen, Elwyn L., Jr.; and Kirk, Gregory H., to General Motors Corporation. Shock absorbing securement device. 3,785,601, Cl. 248-119.00r.

Kitrilakis, Sotiris, to Tecna Corporation. Intrauterine device. 3,785,376, Cl. 128-130.000.

Kittle, Carl Edwin; and Spencer, Keith Louis, to Deere & Company. Flow control dump valve. 3,785,157, Cl. 60-493.000.

Kittredge, Thomas D.: *See—*
Pressman, Gerald L.; and Kittredge, Thomas D., 3,786,514.

Kitzinger, Frank; and Tarassoff, Peter, to Noranda Mines Limited. Automatic speed control and programming system for high-speed belt conveyor type throwers. 3,785,513, Cl. 214-18.220.

Kiuchi, Tadashi: *See—*
Hori, Yasuro; Hiraishi, Kiyoto; Kiuchi, Tadashi; and Kashima, Yoshitake, 3,786,387.

Kiukkonen, Olli Juhani, to Rateko Oy. Car conveyor, in particular for a washing car machine. 3,785,295, Cl. 104-155.000.

Klaproth, Rolf. Trousers. 3,784,986, Cl. 2-237.000.

Klein, Frank F., Jr. Bicycle stem lock. 3,785,676, Cl. 280-279.000.

Kleinmann, Earl E.: *See—*
Taverner, Clarence I.; and Kleinmann, Earl E., 3,785,413.

Klemenz, John J.: *See—*
Eilert, Richard L.; and Klemenz, John J., 3,786,247.

Klepfer, Harold Holmes: *See—*
De Hollander, William Roger; and Klepfer, Harold Holmes, 3,786,120.

Klinger, Isaac: *See—*
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,785,735.

Klinkosch, Reinhard, to Hoesch Aktiengesellschaft. Structural units. 3,785,917, Cl. 161-161.000.

Kloap, Nicholas: *See—*
King, Larry K.; Knapp, Lester L.; Schoener, Ronald C.; Kloap, Nicholas; Starner, Bernard M.; and Remper, John A., 3,786,135.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Langmaack, Jurgen; and Haas, Helmut, 3,785,575.

Kloiber, Robert F., to Brunswick Corporation. Outboard motor anti-tilt locking mechanism. 3,785,328, Cl. 115-17.000.

Knapp, Lester L.: *See—*
King, Larry K.; Knapp, Lester L.; Schoener, Ronald C.; Kloap, Nicholas; Starner, Bernard M.; and Remper, John A., 3,786,135.

Knauf, Jack W., to United States of America, Interior. Method and apparatus for producing orthophotoplans. 3,785,731, Cl. 355-22.000.

Knauft, Guenter: *See—*
Hajdu, Johann; Knauft, Guenter; Skuin, Petar; and Vogt, Edwin, 3,786,430.

Kobayashi, Hajime: *See—*
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Kobayashi, Seihin; Torii, Michihiro; and Jojima, Takehiko, to Fuji Denki Kagaku Kabushiki Kaisha. Magnetic thin film plated wire memory. 3,786,450, Cl. 340-174.0pw.

Kobayashi, Shoichi: *See—*
Osuga, Hiroshi; and Kobayashi, Shoichi, 3,786,115.

Kobayashi, Takanori William, to Coleco Industries, Inc. Hockey game with magnetic control members. 3,785,648, Cl. 273-85.00b.

Koch, H., & Sons, Inc.: *See—*
Gaylord, John A., 3,785,597.

Kodama Brothers Co., Ltd.: *See—*
Okui, Sakujiro, 3,785,362.

Kodama, Tsuneu: *See—*
Ide, Fumio; Kodama, Tsuneu; and Kotake, Yahide, 3,785,921.

Koenig, Martin F.; Dempsey, George A., Jr.; and Issa, Manuel; deceased (by Sheedy, Patrick T.; administrator), to Cutler-Hammer, Inc. Single-bolt joint for feeder and plug-in bus ducts. 3,786,394, Cl. 339-22.00b.

Koester, David W.: *See—*
Cornelius, Edward B.; Delamater, George B.; Koester, David W.; and McEvoy, James E., 3,786,001.

Kofsky, Harvey Irwin. Sorting and counting apparatus. 3,785,386, Cl. 133-3.00d.

Koganer, Valentin Eizerovich: *See—*
Borisov, Jury Modestovich; Budyko, Jury Ivanovich; Dubnitsky, Nikolai Borisovich; Koganer, Valentin Eizerovich; Lisitsyn, Alexandr Ivanovich; Mozokhin, Nikolai Gavrilovich; Maskenskov, Konstantin Mikhailovich; and Dukhnin, Jury Vasilievich, 3,785,353.

Kohama, Masahiro, to Kokusai Tekko Kabushiki Kaisha. Low-frequency induction furnace. 3,786,163, Cl. 13-29.000.

Koike, Norio; and Ashikawa, Mikio, to Hitachi, Ltd. Scanning pulse generator. 3,786,281, Cl. 307-269.000.

Kokaly, Joseph: *See—*
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Kokolis, Steve: *See—*
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Kokusai Kasei Kosha Co., Ltd.: *See—*
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Kokusai Tekko Kabushiki Kaisha: *See—*
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Kollmorgan Corporation: *See—*
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Komoda, Tsutomu; and Nomura, Setsuo, to Hitachi, Ltd. Field emission electron gun. 3,786,305, Cl. 315-30.000.

Kondo, Kenshi. Thermostatic switch. 3,786,389, Cl. 337-389.000.

Konig, Helmut. Dough portioning machine. 3,785,623, Cl. 259-185.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Iwama, Masakuni; Yamamoto, Toshihiko; Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, 3,785,828.

Konno, Kazubiko, to Mitsubishi Petrochemical Company Limited. Recovery of adipic acid. 3,786,096, Cl. 260-537.00r.

Konomi, Shunzi: *See—*
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Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, 3,785,247.

Konrad, William L.: *See—*
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Konstant, Anthony N., to Speedrack Inc. Storage racks. 3,785,502, Cl. 211-134.000.

Konyafv, Jury Sergeevich: *See—*
Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Polikarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.

Kopelke, Harold J.: *See—*
Cincotta, Donald J.; and Kopelke, Harold J., 3,786,245.

Kopelman, Leo G.: *See—*
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Koppers Company, Inc.: *See—*
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Koristek, Zdenek: *See—*
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Kornrumpf, William P.: *See—*
Harnden, John D., Jr.; and Kornrumpf, William P., 3,786,222.

Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. Solid state induction cooking systems for ranges and surface cooking units. 3,786,219, Cl. 219-10.490.

Koros, Robert M.: *See—*
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Kortenoeven, Koos: *See—*
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Koru, Seigfried; and Suling, Carl Hans, to Bayer Aktiengesellschaft. Acrylonitrile graft copolymers and a process for the production. 3,786,104, Cl. 260-881.000.

Kotake, Yahide: *See—*
Ide, Fumio; Kodama, Tsuneu; and Kotake, Yahide, 3,785,921.

Kotenko, Viktoria Mikhailovna: *See—*
Benderovsky, Vladimir Valerianovich; Schepotiev, Alexandr Ivanovich; Yastrebov, Igor Alexandrovich; and Kotenko, Viktoria Mikhailovna, 3,785,589.

Kotschy, Josef. Capacitor with decreased flammability. 3,786,324, Cl. 317-258.000.

Kough, John K.; Martin, Otis M.; and Miller, Silas N., to Ditz-Crane. Building panel enclosures for valley and hip structures. 3,785,114, Cl. 52-748.000.

Kovarik, James C.: *See—*
Applebaum, Sidney P.; and Kovarik, James C., 3,786,509.

Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, to Rheinstahl Huttenwerke. Apparatus for accelerating metallurgical reactions. 3,785,632, Cl. 266-34.00a

Krause, Arthur Waldemar; and Hannah, Malcolm Edward, to Reichold Chemicals, Inc., mesne. Process for decreasing ethylenic polunsaturation in organic carboxylic acids using a co-catalyst. 3,786,037, Cl. 260-97.500.

Krause, Konrad A., to International Business Machines Corporation. Ink jet printer with ink system filter means. 3,786,517, Cl. 346-75.000.

Krebs & Cie: *See—*
Fleck, Jacques, 3,785,951.

Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. N,O-Dicarbamoyl-N-phenyl-hydroxylamines. 3,786,088, Cl. 260-545.00r.

Krieger, Stanley, to United States of America, Army. Dual orifice fuel nozzle with air-assisted primary at low flow rates. 3,785,570, Cl. 239-401.000.

Kristen, Klaus, to Jenaer Glaswerk, Schott & Gen. Temperature measuring resistance. 3,786,390, Cl. 338-22.00r.

Kroger, Harry, to Sperry Rand Corporation. High frequency diode energy transducer and method of manufacture. 3,786,316, Cl. 317-234.00r.

Kronish, Donald P.; and Young, William D., Jr., to Warner-Lambert Company. Diagnostic composition for the detection of nitrite. 3,785,929, Cl. 195-100.000.

Krumm, Heinz G.: *See—*
Beranek, Miroslav; and Krumm, Heinz G., 3,785,171.

Kubo, Junighi: *See—*
Oguchi, Yutaka; Kubo, Junighi; and Goto, Shinji, 3,785,966.

Kubo, Shirohei, to Kabushiki-Kaisha Kubo Shoten. Chair. 3,785,700, Cl. 297-349.000.

Kuchta, August Dennis. Transfer of photopolymer images by irradiation. 3,785,817, Cl. 96-28.000.

Kugler, Kurt, to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G. Thyristors for effecting tap-changing on transformers and including current limiting resistors and standby trigger system. 3,786,337, Cl. 323-43.50s.

Kuhl, Joseph W.; and Lauer, Robert J., to Reliance Electric Company. Final stopping control. 3,785,463, Cl. 187-29.00r.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Methine dyestuffs. 3,786,047, Cl. 260-240.800.

Kulesh, Pavel Ivanovich: *See—*
Mikhalsky, Fedor Mikhailovich; Gasparants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Kume, Toyohiko: *See—*
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Kunzle, Franz Martin: *See—*
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Kuratomi, Tatsuo: *See—*
Yatsurugi, Yoshifumi; Kuratomi, Tatsuo; and Takaishi, Tetsuo, 3,785,122.

Kurauchi, Noritaka; Hiraoka, Susumu; Yoshida, Kenichi; and Ohmori, Masaki, to Sumitomo Electric Industries, Ltd. Device for detecting location of a movable body. 3,786,411, Cl. 340-23.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Amagi, Yasuo; Shiki, Zenya; Ohsumi, Yukihiko; and Noguchi, Kazuo, 3,786,134.
Kuribayashi, Hiroshi; Takeda, Takehiko; Okada, Yoshio; and Yamauchi, Takashi, 3,786,107.

Kuribayashi, Hiroshi; Takeda, Takehiko; Okada, Yoshio; and Yamauchi, Takashi, to Japan Gasoline Co., Ltd. and Kureha Kagaku Kogyo Kabushiki Kaisha. Method of producing alkyl aromatics. 3,786,107, Cl. 260-672.00t.

Kurimsky, Albert, to Rowe International, Inc. Price board slide switch. 3,786,206, Cl. 200-16.00d.

Kurono, Hirokazu: *See—*
Sato, Hitoshi; Tanaka, Mitsuo; Nakamura, Michiharu; Takahashi, Susumu; and Kurono, Hirokazu, 3,786,375.

Kurpanek, Waldemar Helmut. Magneto-motive bistable switching devices. 3,786,385, Cl. 335-207.000.

Kurtin, Stephen L.: *See—*
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,786,429.
Puckett, Jason N., Jr.; Kurtin, Stephen L.; and Goldman, Arnold J., 3,786,482.

Kurusu, Tosiro: *See—*
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Kurz, Bruno F.: *See—*
Ferro, Armand P.; Harnden, John D., Jr.; and Kurz, Bruno F., 3,786,264.

Kusmierek, Jadwiga: *See—*
Brzozowski, Zhigniew; Kusmierek, Jadwiga; and Porljko, Stanislaw, 3,786,019.

Kuster, Rene. Upstanding flexible packing and method of manufacturing same. 3,785,546, Cl. 229-53.000.

Kusunose, Takamaro: *See—*
Shimoda, Keitaro; Obama, Isamu; and Kusunose, Takamaro, 3,786,125.

Kuth, Robert: *See—*
Hildebrand, Dietrich; and Kuth, Robert, 3,785,767.

Kwasnitschka, Karl, to Joachim Erbprinz Zu Foustenberg. Conveying system. 3,785,477, Cl. 198-218.000.

Kyburz, Emilio; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. 5,11-dihydro 10H-dibenzo [2,d] cyclohephen 10-ones. 3,786,095, Cl. 260-570.87c.

Kylin, Donald H.; and Reim, Thomas E., to Republic Steel Corporation. Bulk material nuclear moisture gauging system. 3,786,251, Cl. 250-390.000.

Kyoda Plastics, Limited: *See—*
Shira, Jerry P., 3,786,171.

Kyow Steel Works, Ltd.: *See—*
Takashima, Koichi, 3,785,467.

Kyryluk, William Frederick. Filter for obtaining a three-dimensional effect. 3,785,720, Cl. 350-144.000.

Kysor Industrial Corporation: *See—*
Wolf, Heinz K.; and Averbeck, Dean C., 3,785,746.

La Cagnina, John M.; and Davies, Robert G., to Xerox Corporation. Eliminating corona aring in photoelectrophoretic imaging. 3,785,816, Cl. 96-1.300.

La Cellophene: *See—*
Weber, Guy Paul; and Deshayes, Philippe Marie, 3,785,730.

La Costa, Nicholas J.: *See—*
Barr, Irwin R.; La Costa, Nicholas J.; and Davis, William O., 3,785,293.

La Fant Research Company: *See—*
Lauster, Frederick L., 3,785,986.

La Soudure Electrique, Procedes Arcos: *See—*
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Lacombat, Michel: *See—*
Hepner, Georges; Lacombat, Michel; and Marcy, Raymond, 3,786,332.

Laczko, Robert P.: *See—*
Leeson, Jeffrey S.; and Laczko, Robert P., 3,785,873.

Laing, Ingeborg; and Laing, Nikolaus. Temperature conditioning means. 3,785,365, Cl. 176-400.000.

Laing, Nikolaus: *See—*
Laing, Ingeborg; and Laing, Nikolaus, 3,785,365.

Laing, Nikolaus. Apparatus for the charging and discharging of storage heaters. 3,786,232, Cl. 219-365.000.

Lake, Willett R., Jr.; and Ward, James O., to Pak-Well Corporation. Apparatus for cutting blanks. 3,785,231, Cl. 83-103.000.

Laliccia, Frederico Riccardo: *See—*
Pinede, Edouard; Barsellotti, John Anthony; and Laliccia, Frederico Riccardo, 3,786,194.

Lambert, Andre; Soury, Jean-Pierre; and Sifre, Gaston, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Device for transferring and measuring the flow of pure gas. 3,785,205, Cl. 73-198.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Sealing bar for a rotary piston internal combustion engine. 3,785,745, Cl. 418-117.000.

Land, Edwin H.; Bloom, Stanely M.; and Rogers, Howard G., to Polaroid Corporation. Diffusion transfer color processes and products and compositions useful therein. 3,785,814, Cl. 96-3.000.

Lane, Constance A.: *See—*
Mattei, Victor; and Lane, Constance A., 3,785,848.

Lang, Ludwig G. Device for the implementation of procedures for the decontamination of internal combustion engine exhaust gases. 3,785,628, Cl. 261-65.000.

Langenderfer, Les M., to General Motors Corporation. Gear pump. 3,785,756, Cl. 418-170.000.

Langhans, Roy Kenneth, to ICI America Inc. Stable liquid emulsifier compositions. 3,785,993, Cl. 252-356.000.

Langill, Addison W., Jr.: *See—*
Friedland, Harry; and Langill, Addison W., Jr., 3,785,389.

Langmaack, Jurgen; and Haas, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Vibrating mill with introduction of refrigerants into the solid material being ground in the grinding chamber. 3,785,575, Cl. 241-33.000.

Lantz, William F. Anchor hold-down device. 3,785,323, Cl. 114-210.000.

Lardeau, Jacques, to Societe d'Optique, Precision, Electronique et Mecanique-Sopelem. Iris diaphragm. 3,785,265, Cl. 95-64.00r.

Larkin, Barrymore T., to Koppers Company, Inc. Apparatus for continuous liquid phase separation. 3,785,776, Cl. 23-267.00r.

Lasch, Cecil A., Jr., to Industrial Modular Systems Corporation, mesne. Method of producing fluid bearing track structure. 3,785,027, Cl. 29-157.00c.

Lasky, Ronald J., to Stock Equipment Company. Electromagnetic tachometer. 3,786,354, Cl. 324-173.000.

Lassy, Carl O.; and Lassy, William A. Workpiece hold-down jaws with constant dimension. 3,785,635, Cl. 269-136.000.

Lassy, William A.: *See—*
Lassy, Carl O.; and Lassy, William A., 3,785,635.

Last, Anthony Graham Marshall: *See—*
Birchall, James Derek; Cassidy, John Edward; Stafford, John; and Last, Anthony Graham Marshall, 3,785,845.

Latham, Allen, Jr., to Haemonetics Corporation. Centrifuge chuck for disposable, snap-in centrifuge rotor. 3,785,549, Cl. 233-23.00r.

Lauer, Karl; Bodka, Heinz-Gunter; and Stoeck, Georg, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. Process for the chromatographic separation of multi-component mixtures containing glucose. 3,785,864, Cl. 127-46.00a.

Lauer, Robert J.: *See—*
Kuhl, Joseph W.; and Lauer, Robert J., 3,785,463.

Laufe, Leonard E.: *See—*
Lower, Brenton R.; Hughes, Kenneth E.; and Laufe, Leonard E., 3,785,381.

Laufe, Leonard E., mesne: *See—*
Lower, Brenton R.; Hughes, Kenneth E.; and Laufe, Leonard E., 3,785,381.

Launay, Pierre, to Compagnie de Material et d'Equipements Techniques C.O.M.E.T. Systems constituted by cage-nuts and their cages. 3,785,421, Cl. 151-41.750.

Laurent, Daniel, to Merlin Gerin, Societe Anonyme. Balanced support mechanism for a linearly movably current collecting head. 3,786,204, Cl. 191-48.000.

Lauster, Frederick L., to La Fant Research Company. Denture cleaner. 3,785,986, Cl. 252-136.000.

Lavan, Philip J.: *See—*
Merrill, Duane F.; and Lavan, Philip J., 3,786,015.

Lawless, Michael J.: *See—*
James, Bruce A.; Lawless, Michael J.; and Clark, David L., 3,785,186.

Lawson, Edward J.: *See—*
Quesinberry, Arden L.; and Lawson, Edward J., 3,786,275.

Le Havre, Pierre Jean: *See—*
Bourgeois, Michel; and Le Havre, Pierre Jean, 3,785,320.

Le Jeune, Gwenole Jean-Claude, to Societe d'Etudes Fabrications, Installations et Manutention en Abrege EFIM S.A. Mobile appliance for the treatment of domestic garbage. 3,785,280, Cl. 100-100.000.

Leal, Victor Mario: *See—*
Rubio, Manuel Jesus; and Leal, Victor Mario, 3,785,201.

Leasure, William C.; and Garcia, Luis, to Mira-Pak Inc. Method and apparatus for forming shaped package. 3,785,112, Cl. 53-28.000.

Leben Utility Co., Ltd.: *See—*
Furuya, Akio; Hachiboshi, Makoto; Adachi, Toshio; and Uchida, Masakatsu, 3,786,004.

Lechnir, Richard J.: *See—*
Schroeder, Collin H.; Lechnir, Richard J.; Cleveland, Peter G.; Deluca, Hector F.; and Derse, Philip H., 3,786,062.

Lectra Data, Inc.: *See—*
Martin, Roy A.; and Pittman, Clarence L., 3,785,550.

Ledin, Lars Eric: *See—*
Mejyr, Carl-Anker; and Ledin, Lars Eric, 3,785,361.

Lee, Conrad E., to Pako Corporation. Driving mechanism for roller transporting devices. 3,785,543, Cl. 226-188.000.

Lee, David Q.: *See—*
Jacobs, Melvin A.; and Lee, David Q., 3,786,197.

Lee, Fui-Tseng H.; and Volpp, Gert P., to FMC Corporation. Fungicidal use of certain benz [d] isothiazoles. 3,786,150, Cl. 424-270.000.

Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., to Merck & Co., Inc. Magnesium oxide coatings. 3,785,879, Cl. 148-27.000.

Lee, Norman, to British Aircraft Corporation. Aircraft flap system. 3,785,594, Cl. 244-42.0da.

Lee, Raymond, Organization, Inc., The: *See—*
Baratta, Hilda E., 3,785,343.
Muffly, Robert N., 3,785,641.
Preston, Gerald, 3,784,999.
Ramirez, Ramon, 3,785,599.
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Lee, Thomas Brian: *See—*
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Leeds & Northrup Company: *See—*
Baldwin, William H.; and Clauss, Harry G., Jr., 3,785,947.

Leeson, James L., Jr., to Woodward Governor Company. Digital synchronizing and phasing system. 3,785,147, Cl. 60-97.00s.

Leeson, Jeffrey S.; and Laczko, Robert P., to ESB Incorporated. Activated battery. 3,785,873, Cl. 136-114.000.

Leesona Corporation: *See—*
Seem, Warren A.; Stoddard, Nicholas J.; and Stoddard, Robert W., 3,785,135.
Tecce, Frederick C.; and Dudzik, Chester J., 3,785,136.

Legrand, Pierre. High-density relax-transport system. 3,784,989, Cl. 5-9.00r.

Leistner, Werner: *See—*
Boning, Walter; and Leistner, Werner, 3,786,293.

Leith, William Cumming. Rotating concentric homogeneous turbulence electrostatic precipitation gas cleaner method. 3,785,117, Cl. 55-2.000.

Leith, William Cumming. Rotating concentric "homogeneous turbulence" fabric bag gas cleaner method. 3,785,123, Cl. 55-96.000.

Leitz, Ernst, G.m.b.H.: *See—*
Hock, Fromund; Feldmann, Hennig; and Fialkowski, Heinz, 3,785,714.
Loseries, Peter; and Hayashi, Toshio, 3,785,264.

Lelie, Arthur S., to United States of America, Navy. Voltage-controlled low-pass filter. 3,786,363, Cl. 330-31.000.

Leming, John C.; Glassie, Donelson C.; and Jahnel, Roy M. Heavy duty swivel platform conveyor. 3,785,316, Cl. 114-43.500.

Leonard Concrete Pipe Co., Inc.: *See—*
Worker, George W.; and Waddington, Philip L., 3,785,607.

Leonard, Milton K.: *See—*
Moore, James C.; and Leonard, Milton K., 3,785,696.

Lesher, George Y.: *See—*
Brundage, R. Pauline; and Lesher, George Y., 3,786,043.

Letourneur, Guy, to Coparfi. Structural arrangement. 3,785,109, Cl. 52-633.000.

Levi, Mina Neukhovna: *See—*
Mikhalsky, Fedor Mikhailovich; Gaspariants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Levi, Yakov Efimovich: *See—*
Mikhalsky, Fedor Mikhailovich; Gaspariants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Lewis, Donald Bernard: *See—*
McLean, Norman; Lewis, Donald Bernard; and McLaren, Robert John Lawson, 3,785,216.

Lewis, Hector E., to Surgical Appliance Industries, Inc. Elbow sleeve. 3,785,371, Cl. 128-77.000.

Lexitron Corporation: *See—*
Puckett, Jason N., Jr.; Kurtin, Stephen L.; and Goldman, Arnold J., 3,786,482.

Lexitron Corporation, mesne: *See—*
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,786,429.

Leyman Manufacturing Corporation: *See—*
Shearer, John Marshal, 3,785,678.

Li, Sik U.; and Koros, Robert M., to Esso Research and Engineering Company. Gas liquid inlet distributor. 3,785,779, Cl. 23-284.000.

Liberti, Frank N.: *See—*
Jaquiss, Donald B. G.; and Liberti, Frank N., 3,786,114.

Lichstein, Bernard M.; and Du Bois, Robert J., to Allied Chemical Corporation. Novel bisamides containing fluorine. 3,786,093, Cl. 260-561.0hl.

Liebold, Gert: *See—*
Oppenlaender, Knut; Liebold, Gert; and Buettner, Egon, 3,786,081.

Liebschutz, Lynn C.: *See—*
Grubb, Harold R.; and Liebschutz, Lynn C., 3,786,455.

Lien, Wallace A., to Becton, Dickinson Electronics Company. Keyboard switch assembly with movable, multi-contact means and associated swinger portions. 3,786,205, Cl. 200-5.00a.

Ligh, David R. Refuse compressor. 3,785,281, Cl. 100-116.000.

Liguori, Mario, to Elettronica Aster S. R. L. Rotary stepped joint for waveguides. 3,786,378, Cl. 333-98.0tn.

Liker, Jack: *See—*
Castellana, Frank S.; Liker, Jack; and Kokolis, Steve, 3,786,228.

Lilly, Eli, and Company: *See—*
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Linde Aktiengesellschaft: *See—*
Redemann, Hubert, 3,785,128.

Linde, Bjorn H Son: *See—*
Martensson, Kjell Halvard; Linde, Bjorn H Son; Palsson, Jan Fredrik; and Jerre, Sven Torsten, 3,785,113.

Linder, Alex, GmbH: *See—*
Grooteboer, Wilhelm, 3,785,510.

Lindly & Company, Inc.: *See—*
Abilock, Solomon; and Shottenfeld, Richard, 3,786,265.

Lindsay Manufacturing Co.: *See—*
Zimmerer, Arthur L.; and Anderson, John L., 3,785,400.

Ling, Jack A.; and Clem, Dennis W., to Goodyear Tire & Rubber Company, The. Tire building drum. 3,785,894, Cl. 156-415.000.

Lipe, Gordon C.; and Abbott, William S. Audio-visual warning system. 3,786,498, Cl. 340-371.000.

Lipp, Robert J.: *See—*
Alexander, Stephen B.; Bryant, Richard W.; Lipp, Robert J.; and Tu, George K., 3,786,442.

Lipson, Herbert G. Sealable container for liquid flotation of cast-bound limbs. 3,785,374, Cl. 128-82.000.

Lipson, Herbert G. Temporary inflatable cast. 3,785,375, Cl. 128-82.100.

Lisitsyn, Alexandr Ivanovich: *See—*
Borisov, Jury Modestovich; Budyko, Jury Ivanovich; Dubnitsky, Nikolai Borisovich; Koganer, Valentin Eizerovich; Lisitsyn, Alexandr Ivanovich; Mozokhin, Nikolai Gavrilovich; Maskenskov, Konstantin Mikhailovich; and Dukhnin, Jury Vasilievich, 3,785,353.

Lissner, Rudolf W.; and Mulvany, Richard B., to International Business Machines Corporation. Magnetic disk storage apparatus. 3,786,454, Cl. 340-174.10c.

List, Edward L., to Esso Research and Engineering Company. Mass flow meter. 3,785,204, Cl. 73-194.0pl.

Little, Carl H., to Weber-Knapp Company. Follower assembly. 3,785,521, Cl. 220-22.300.

Litton Systems, Inc.: *See—*
Conrad, Richard A., 3,786,393.

Liu, Olive Y.; and Wahl, John S., to Schlumberger Technology Corporation. Method and apparatus. 3,786,267, Cl. 250-256.000.

Lock, Alan Howard: *See—*
Lynas, Derek Leigh; Lock, Alan Howard; and Houghton, Paul, 3,786,348.

Lock, Everett H.: *See—*
Maurer, William C.; and Lock, Everett H., 3,785,659.

Lockwood, Harry Francis, to RCA Corporation. Method for depositing a semiconductor material on the substrate from the liquid phase. 3,785,884, Cl. 148-171.000.

Lodige, Alois. Expansion joint construction for concrete slabs. 3,785,741, Cl. 404-51.000.

Log Etronics, Inc.: *See—*
Bender, Lee C., 3,785,733.

LogEtronics Inc.: *See—*
Morioka, Masami, 3,785,269.

Logomasini, James C.; and Shelby, Richard K., to Monsanto Company. Apparatus improvements in a rotary blow molding machine. 3,785,761, Cl. 425-387.00b.

Lohr, Delmar F., Jr.; and Kay, Edward Leo, to Firestone Tire & Rubber Company, The. Stabilized polybutadiene resin. 3,786,009, Cl. 260-237.00n.

Lohr, Thomas L., to Allied Chemical Corporation. Apparatus for measuring the angular displacement and the angular velocity of a rotation member. 3,786,336, Cl. 322-51.000.

Loilier, Michel: *See—*
Devillers, Pierre Louis Henri; and Loilier, Michel, 3,785,863.

Lokey, Robert C., to Lokey Tool, Inc. Automatic safety brake for rotary blade equipment. 3,785,230, Cl. 83-58.000.

Lokey Tool, Inc.: *See—*
Lokey, Robert C., 3,785,230.

Long, Ernest L.: *See—*
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,786,344.

Long, Jacques; and Bessot, Jean-Jacques, to Compagnie Industrielle des Telecommunications. Diffusion pump assembly. 3,785,162, Cl. 62-55.500.

Long, Willis F., to Hughes Aircraft Company. Hybrid DC circuit breaker. 3,786,310, Cl. 317-11.00c.

Lonnemo, Kurt R.; and Bergstedt, Jan O., to Sperry Rand Corporation. Power transmission. 3,785,398, Cl. 137-488.000.

Lonza Ltd.: *See—*
Heetman, Jakobus, 3,785,198.

Lorenzi, Donald E., to Magnaflux Corporation. Method in detecting defects using magnetic particle in a viscous fluid that restricts their mobility. 3,786,346, Cl. 324-38.000.

Loseries, Peter; and Hayashi, Toshio, 50% to Minolta Camera Co. Ltd. and 50% to Leitz, Ernst, G.m.b.H. Swining-sector camera shutter with improved warning indicator. 3,785,264, Cl. 95-55.000.

Lower, Brenton R.; Hughes, Kenneth E.; and Laufe, Leonard E., to Laufe, Leonard E., mesne. Pressure sensing obstetrical forceps. 3,785,381, Cl. 128-323.000.

LP Industria Chimica per l'Anedamento S.p.A.: *See—*
Padovano, Felix, 3,785,600.

LTV Aerospace Corporation: *See—*
Stalmach, Charles J., Jr., 3,785,591.

Lubkin, Frances: *See—*
Lubkin, Samuel, 3,786,422.

Lubkin, Samuel; deceased (by Lubkin, Frances; administratrix), to Rel-Reeves, Inc., mesne. System for determination of deviations of a vehicle from a prescribed route. 3,786,422, Cl. 340-149.00r.

Lucas, Robert G.: *See—*
Frye, Kenneth G.; Lucas, Robert G.; Seidel, Kenneth L.; and Rohosy, Soma M., 3,785,232.

Luchsinger, Wayne W.; and Nadeau, Richard G., to Du Pont de Nemours, E. I., and Company. Method and apparatus for analyzing a liquid containing macromolecules that would interfere with the analysis. 3,785,771, Cl. 23-230.00r.

Luckenbach, Roy; and Funk, John, to Burlington Industries, Inc. Dyeing apparatus. 3,785,180, Cl. 68-15.000.

Ludwig, David P.: *See—*
Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,785,903.

Ludwig, John T.; and Steiner, Paul D., to Electromagnetic Industries Inc. Permanent magnet solenoid device. 3,786,383, Cl. 335-231.000.

Luethi, Christian: *See—*
Piller, Bernhard; Meier, Max; Duennenberger, Max; Biland, Hans Rudolf; and Luethi, Christian, 3,785,827.

Lumb, Dale R.: *See—*
McCarthy, Thomas M.; and Lumb, Dale R., 3,785,368.

Lunde, Hans: *See—*
Papst, Hermann; Lunde, Hans; and Wrobel, Gunter, 3,786,290.

Lundqvist, Harald Oskar. Adjustable shelving structure. 3,785,301, Cl. 108-109.000.

Lunt, Robert S., III: *See—*
Merrill, Howard E.; and Lunt, Robert S., III, 3,785,960.

Luongo, Michael C., to Westinghouse Electric Corporation. Electronic system and method for operating a steam turbine with independent overspeed protection especially adapted for a nuclear reactor powered steam turbine. 3,785,148, Cl. 60-105.000.

Lutchansky, Milton; and Township, Randolph, to Bell Telephone Laboratories, Incorporated. Waveguide structure utilizing roller spring supports. 3,786,379, Cl. 333-98.00r.

Lycke, Nils Erik Oskar: *See—*
Corrodi, Hans Rudolf; Lycke, Nils Erik Oskar; and Roos, Bjorn-Erik, 3,786,143.

Lynas, Derek Leigh; Lock, Alan Howard; and Houghton, Paul, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Piezo electric accelerometer pulse testing. 3,786,348, Cl. 324-6.000.

Lynch Communication Systems, Inc.: *See*—
Nordling, Frederik, 3,786,280.

Lynch, Leonard J. Dual inline package handling tool. 3,785,033, Cl. 29-203.00h.

Ma, Joseph T.: *See*—
Brown, Caroll J.; Chesarek, Donald J.; Fisk, Dale E.; Ma, Joseph T.; Martin, Harold F.; and Reynolds, Zack D., 3,786,479.

Mac Arthur, Donald Morley, to Bell Telephone Laboratories, Incorporated. Technique for electrolytically etching tungsten. 3,785,945, Cl. 204-129.950.

MacDonald, Francis X.; and MacDonald, Paul M., to P. X. Industries, Inc. Cabinet door restraint. 3,785,685, Cl. 292-288.000.

MacDonald, Paul M.: *See*—
MacDonald, Francis X.; and MacDonald, Paul M., 3,785,685.

MacDonald, Robert Neal, to Du Pont de Nemours, E. I., and Company. 1,2,5-Thiadiazole polyesters. 3,786,028, Cl. 260-75.00n.

MacGillis, Donald J. Metal window construction with clamped corner joints. 3,785,090, Cl. 49-425.000.

Machacek, Frantisek; Minarik, Josef; Rossa, Lubomir; Koristek, Zdenek; and Brandstadter, Miroslav, to Vyzkumny ustav pletarsky. Weft knitted fabric and method of producing the same. 3,785,178, Cl. 66-196.000.

Machado, Joseph G. Cleaning apparatus for automobiles with indirect heat exchange for heating the cleaning fluid. 3,785,363, Cl. 126-350.00r.

MacIntyre, John S.: *See*—
Wiesler, Mordechai; Martinonis, Virgil; and MacIntyre, John S., 3,785,507.

MacKenzie, Gerald L.; and Mosher, Paul R., to United States of America, Navy. Hydrogen gas generating composition and method for the same. 3,786,139, Cl. 423-657.000.

Macovski, Albert, to Stamford Research Institute. Fourier transforming system. 3,786,180, Cl. 178-6.500.

MacPhee, Colin A. A., to Federal Pacific Electric Company. Ground fault detector. 3,786,356, Cl. 317-18.00d.

Maes Incorporated: *See*—
Flowerday, Carl W., 3,785,337.

Magna-Matic Systems, Inc.: *See*—
Maynard, John F., 3,785,475.

Magnaflux Corporation: *See*—
Lorenzi, Donald E., 3,786,346.

Magnetic Analysis Corporation: *See*—
Mansson, Sven E., 3,786,347.

Magnor, Inc.: *See*—
Coggeshall, John C., 3,785,772.

Magnussen, John L.: *See*—
Kabat, John L.; Magnussen, John L.; Porter, Richard B.; and Tobias, James R., 3,785,432.

Maheras, Geroge: *See*—
Castrucci, Paul P.; Grochowski, Edward G.; Hess, Martin S.; Maheras, Geroge; and North, William D., 3,785,886.

Makie, George E.: *See*—
Hider, Theodore M.; Hawn, Frank A.; and Makie, George E., 3,785,846.

Malik, Marvin J., to General Motors Corporation. Hydrodynamic fluid unit with energy storage. 3,785,154, Cl. 60-347.000.

Mallory, P. R., & Co., Inc.: *See*—
Zaleski, John, 3,785,872.

Mallory, William L.: *See*—
Carlsmith, Lawrence A.; Mallory, William L.; and Perkins, Joseph K., 3,785,577.

Mancini, Emilio: *See*—
De Vita, Luciano; and Mancini, Emilio, 3,786,187.

Mandel, Jorn: *See*—
Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, 3,785,632.

Mandeltort, Stanley T., to VCA Corporation. Aerosol dispensing device. 3,785,528, Cl. 222-148.000.

Mann, Horace C., Jr., to Tennessee Valley Authority. Production of urea-ammonium sulfate. 3,785,796, Cl. 71-28.000.

Mann, Robert H. Insulated containers or the like. 3,785,254, Cl. 93-36.010.

Mansson, Sven E., to Magnetic Analysis Corporation. Apparatus for generating stable driving pulses for an eddy current test system. 3,786,347, Cl. 324-40.000.

Maple, Steven E., to Nelson, L. R., Corporation, mesne. Shut-off device for traveling sprinkler. 3,785,563, Cl. 239-183.000.

Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Nondestructive read semiconductor memory utilizing avalanche breakdown. 3,786,443, Cl. 340-173.00r.

Marathon Oil Company: *See*—
Oleszko, Thaddeus J., 3,786,110.

Marcy, Raymond: *See*—
Hepner, Georges; Lacombat, Michel; and Marcy, Raymond, 3,786,332.

Mardiguian, Jean; and Fournier, Pierre, to Societe a Responsabilite Limitee dite: MAR-PHA Societe d'Etudes d'Exploitation de Marques. Compounds, 2-bis(4-chlorophenoxy)ethyl nicotinate, 2-bis(4-chlorophenoxy)propyl dinicotinate and 2-(3,4-dimethyl-6-isobornl-phenoxy)ethyl nicotinate. 3,786,060, Cl. 260-295.50r.

Mare, Ernest, to Hershberger, J. Ronald. Scrubbing apparatus. 3,785,127, Cl. 55-233.000.

Marecek, John R.: *See*—
Niemi, Arvi E.; and Marecek, John R., 3,785,001.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Lubricant sealing device for a work feeding mechanism of a sewing machine. 3,785,310, Cl. 112-256.000.

Marion, Donald L.; Hanson, Lawrence R.; and Strand, Robert C., to Atlantic Richfield Company. Aqueous emulsion polish compositions. 3,786,012, Cl. 260-28.500.

Mark Products, Inc.: *See*—
Hazelhurst, Gerald D., 3,786,410.

Marke, Paul Anthony Bryant: *See*—
Jenkinson, William David; and Marke, Paul Anthony Bryant, 3,786,408.

Marker, Hannes. Safety ski binding system. 3,785,668, Cl. 280-11.35r.

Marks, William J. Fishing line. 3,785,011, Cl. 24-115.00h.

Markus, Richard B.: *See*—
Danforth, Leon J., 3,785,319.

Marnerakis, Costas S. Current monitoring system and method. 3,786,501, Cl. 340-409.000.

Mars, James E.: *See*—
Poole, Donald R.; Stang, Peter L.; and Mars, James E., 3,785,674.

Marsee, Frederick J., to Ethyl Corporation. Carburetor. 3,785,624, Cl. 261-23.00a.

Marsh, Douglas George; and Maxfield, Thomas Gerald, to Bell Telephone Laboratories, Incorporated. Balanced output operational amplifier. 3,786,362, Cl. 330-30.00d.

Marsilia, Louis P.; and Moran, Robert J., to Cardinal Instrument Corporation. Clinical thermometer. 3,785,208, Cl. 73-368.400.

Martel Jacques; Huynh, Chanh; and Buendia, Jean. Novel cyclopropanecarboxylic acids and esters. 3,786,052, Cl. 260-240.00r.

Martel, Jacques; and Buendia, Jean, to Roussel-UCLAF. Process for preparation of cis-chrysanthemic acids. 3,786,070, Cl. 260-343.20r.

Martell, Dennis J., to Northern Illinois Gas Company. Apparatus for cumulatively storing and remotely reading a meter. 3,786,423, Cl. 340-151.000.

Martensson, Kjell Halvard; Linde, Bjorn H Son; Palsson, Jan Fredrik; and Jerre, Sven Torsten, to Tetra Pak International AB. Packaging machine. 3,785,113, Cl. 53-186.000.

Martin, Edward J. Demountable camp grill. 3,785,360, Cl. 126-30.000.

Martin, Harold F.: *See*—
Brown, Caroll J.; Chesarek, Donald J.; Fisk, Dale E.; Ma, Joseph T.; Martin, Harold F.; and Reynolds, Zack D., 3,786,479.

Martin, Kenneth Edward, to U.S. Philips Corporation. EHT supply particularly for television receivers. 3,786,299, Cl. 315-29.000.

Martin Marietta Corporation: *See*—
Peppler, Richard B.; and Rosskopf, Philip A., 3,785,839.

Martin, Otis M.: *See*—
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,785,114.

Martin, Ronald C.: *See*—
Schaller, Willard W.; Martin, Ronald C.; and Sixt, Marty E., 3,785,682.

Martin, Roy A.; and Pittman, Clarence L., to Lectra Data, Inc. Voting machine. 3,785,550, Cl. 235-50.00r.

Martinonis, Virgil: *See*—
Wiesler, Mordechai; Martinonis, Virgil; and MacIntyre, John S., 3,785,507.

Martonair Limited: *See*—
Kirk, Colin John, 3,785,403.

Marvel Industries, Inc.: *See*—
Ericson, John F. E., 3,785,692.

Maschinenfabrik Reinhausen Gebruder Scheubeck K.G.: *See*—
Kugler, Kurt, 3,786,337.

Maschinenfabrik und Giesserei Netstal AG: *See*—
Munz, Paul; and Byland, Hans, 3,785,116.

Mascioli, Rocco L.: *See*—
Bechara, Ibrahim S.; and Mascioli, Rocco L., 3,786,005.

Maskenskov, Konstantin Mikhailovich: *See*—
Borisov, Jury Modestovich; Budyko, Jury Ivanovich; Dubnitsky, Nikolai Borisovich; Koganer, Valentin Eizerovich; Lisitsyn, Alexandr Ivanovich; Mozokhin, Nikolai Gavrilovich; Maskenskov, Konstantin Mikhailovich; and Dukhnin, Jury Vasilievich, 3,785,353.

Mason, Paul B.: *See*—
Batter, John F., Jr.; Mason, Paul B.; Stella, Joseph A.; Thomas, Paul W., Jr.; and Wright, Joseph H., 3,785,725.

Masonry Systems, Inc., mesne: *See*—
Behunin, Gage B.; Cole, Eugene A.; and Staadt, Charles R., 3,785,454.

Masopust, Otto I., Jr.: *See*—
Brown, Donald R.; Masopust, Otto I., Jr.; and Stoltz, James F., 3,786,322.

Massachusetts Institute of Technology: *See*—
King, Paul Allen, Jr., 3,786,478.

Massaro, John D.; and Massaro, Michael J. Warning device for swimming pools or the like. 3,786,469, Cl. 340-261.000.

Massaro, Michael J.: *See*—
Massaro, John D.; and Massaro, Michael J., 3,786,469.

Massey-Ferguson-Perkins, Limited: *See*—
Crawford, Alexander, 3,785,573.

Masuda, Isao: *See*—
Izumitani, Tetsuro; and Masuda, Isao, 3,785,835.

Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, to Foundation: Research Institute of Electric and Magnetic Alloys, The. Ni-Fe-Ta alloys for magnetic recording-reproducing heads. 3,785,880, Cl. 148-31.550.

Matassov, George: *See—*
Barry, James D.; Freedman, Paul M.; and Matassov, George, 3,786,370.

Mathauser, William R. Magnetic self-aligning electrical connector. 3,786,391, Cl. 339-12.00r.

Mathews, Bernard C. Slat elevators for combines or the like. 3,785,472, Cl. 198-171.000.

Mathews, James Robert, to Bell Telephone Laboratories, Incorporated. Color camera tube target having integral indexing structure. 3,786,321, Cl. 317-235.00r.

Mathey, Francois: *See—*
Cousserans, Gilbert; Mathey, Francois; and Gryszkiewic-Trouchimowski, Oleg, 3,786,155.

Mathis, Ronald D.; and Dix, James S., to Phillips Petroleum Company. Polymers of 1-olefins protected against ultraviolet light. 3,786,021, Cl. 260-45.75n.

Matsuda, Mitsuhiro: *See—*
Tsugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,786,010.

Matsui, Atsuro: *See—*
Ichiki, Eiichi; Iida, Kazuo; Matsui, Atsuro; and Kadokura, Hidekimi, 3,786,080.

Matsui, Katsuaki: *See—*
Nagawa, Masatoshi; Suzuki, Yoshio; Matsui, Katsuaki; Iijima, Masaoki; and Tsurusaki, Yoshiyasu, 3,786,147.

Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Method of exposure in multi-color electrophotography. 3,785,812, Cl. 96-1.200.

Matsuno, Minoru: *See—*
Fujii, Heihachi; Kasano, Kazuhiko; Matsuno, Minoru; Moroi, Tadahiko; and Kitamura, Munehiro, 3,786,295.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hayakawa, Shigeru, 3,786,262.
Ikeda, Hisao, 3,785,658.
Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsugu; and Kitamura, Saburo, 3,786,254.

Matsushita Electric Industrial Company: *See—*
Kaneko, Masahiko; Miyama, Hiroshi; and Nishida, Jun, 3,786,182.

Matsushita Electronics Corporation: *See—*
Kano, Gota; Fujiwara, Shohei; Iizuka, Mutsuo; Hasegawa, Hiromasa; and Sawaki, Tsukasa, 3,786,320.
Okumura, Tomisaburo, 3,786,319.

Mattei, Victor; and Lane, Constance A., to Rohm & Haas Company. Polyurethane plasticized topcoat for leather and method. 3,785,848, Cl. 117-73.000.

Matthews, Hugh B.: *See—*
Ross, Gerald F.; Matthews, Hugh B.; and Robbins, Kenneth W., 3,786,413.

Matthey, Hermann; Payer, Stefan; and Zirngiebl, Eberhard, to Friedrich Uhde GmbH. Electrolysis cell with liquid electrode. 3,785,949, Cl. 204-219.000.

Matuo, Hiroto: *See—*
Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Sekiya, Hitoshi; Matuo, Hiroto; and Kimata, Shizuo, 3,785,946.

Maurer, Robert D., to Corning Glass Works. Optical waveguide delay line. 3,785,716, Cl. 350-96.0wg.

Maurer, William C.; and Lock, Everett H., to Esso Production Research Company. Packing cartridge for reciprocating pump. 3,785,659, Cl. 277-35.000.

Mauthe, Gerhard, to Aktiengesellschaft Brown, Boveri & Cie. Electrical compressing switch. 3,786,215, Cl. 200-148.00a.

Maxfield, Thomas Gerald: *See—*
Marsh, Douglas George; and Maxfield, Thomas Gerald, 3,786,362.

Maxson Corporation, The: *See—*
Barnard, Benjamin R.; and Puariea, Douglas A., 3,785,297.

Mayer, Siegfried: *See—*
Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, 3,785,632.

Maynard, John F., to Magna-Matic Systems, Inc. Magnetically controlled non-synchronous conveyor system. 3,785,475, Cl. 198-41.000.

Mayo, Howard A., Jr., to Allis-Chalmers Corporation. Axial flow hydraulic turbine generator installation. 3,785,747, Cl. 415-33.000.

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Method and apparatus for the preparation of beverages. 3,785,492, Cl. 210-149.000.

McAinsh, James: *See—*
Turton, Cecil Nigel; and McAinsh, James, 3,785,916.

McCaldin, James O.: *See—*
Mead, Carver A.; and McCaldin, James O., 3,786,315.

McCarthy, Thomas M.; and Lumb, Dale R. Abnormal nerve pressure locus detector and method. 3,785,368, Cl. 128-2.10z.

McClellan, Alan J.; and Dutton, Harold R.; deceased (by Dutton, Edna M.; executrix), to General Motors Corporation. Method of assembling inserts with precision looseness. 3,785,029, Cl. 29-157.10r.

McClure, Harold E.: *See—*
Seipp, Ronald W.; and McClure, Harold E., 3,786,227.

McCord, John T., 50% to Ghigo, Andrea S. Flexible and fireproof automobile diaper. 3,785,451, Cl. 180-69.100.

McCormick, John. Heat transfer apparatus. 3,785,350, Cl. 122-115.000.

McCue, David D.; and Brendle, Thomas A., to Aeroquip Corporation. Locomotive information recorder. 3,786,512, Cl. 346-33.00d.

McDaniel, Johnny B. Automatic retractable ground electrical connector. 3,786,392, Cl. 339-14.00p.

McDonald, Carl C.; and Patel, Arvind M., to International Business Machines Corporation. Error detection systems. 3,786,439, Cl. 340-146.1al.

McDonald, William S.: *See—*
Wagers, William O.; Frappier, Robert H.; McDonald, William S.; and Boggs, Charles L., 3,785,908.

McDonnell Douglas Corporation: *See—*
Haggberg, Marvin D.; Kavanagh, Ira K.; and Van Horik, Leonard R., 3,785,788.

McEvoy, James E.: *See—*
Cornelius, Edward B.; Delamater, George B.; Koester, David W.; and McEvoy, James E., 3,786,001.

McGraw-Edison Company: *See—*
Gaven, Thomas J.; Crocker, Harry E.; and Feldman, Edward, 3,786,189.
Sidell, Philip A., 3,786,291.

McHattie, Earl E. Automatic grounding connection for electrical unit. 3,786,399, Cl. 339-14.00r.

McIlvaine, Robert W., to Environeering, Inc. Method and apparatus for removing particulates and oxides of sulphur from gas. 3,785,119, Cl. 55-7.000.

McIlvried, Howard G.: *See—*
Giannetti, Joseph P.; McIlvried, Howard G.; and Sebulsky, Raynor T., 3,786,108.

McIntire, Nathan E.; and Porter, Zelma M., to Elk Craft, Inc. Automatic lubrication system. 3,785,456, Cl. 184-6.00r.

McKenna, Chancey D.: *See—*
Teichmann, Newton N.; McKenna, Chancey D.; and Garrone, Albert, 3,785,780.

McKenna, James J.; and Harter, Roy, to Harter, H. Elisabet; surviving spouse of Harter, Roy S., deceased. Safety device for removing radiator caps. 3,785,225, Cl. 81-3.10r.

McKillip, William J.: *See—*
Throckmorton, Peter E.; and McKillip, William J., 3,786,067.

McKinney, Joel D.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,785,959.

McKinney, Lawrence A., to Westinghouse Electric Corporation. Apparatus for gas diffusion. 3,785,629, Cl. 261-122.000.

McLaren, Robert John Lawson: *See—*
McLean, Norman; Lewis, Donald Bernard; and McLaren, Robert John Lawson, 3,785,216.

McLean, Norman; Lewis, Donald Bernard; and McLaren, Robert John Lawson, to Redman Heenan Froude Limited. Control systems for hydrokinetic devices. 3,785,216, Cl. 73-134.000.

McMahon, Robert F.: *See—*
Frye, Harold E.; and McMahon, Robert F., 3,786,434.

McMahon, William Raymond; and Ramsey, Thomas Haliburton. Thin film metallization process for microcircuits. 3,785,937, Cl. 204-15.000.

McNabney, John C.; and Hantke, Gerhard J., to Trane Company, The. Air diffuser fire damper. 3,785,272, Cl. 98-40.00d.

McNulty, Henry V.; and Oatis, Melvin Neal, to Telephonic Equipment Corporation. Circuit and apparatus for bridging and monitoring. 3,786,198, Cl. 179-27.0fh.

McNutt, William P.: *See—*
Appleby, Vernon L.; and McNutt, William P., 3,785,537.

McVoy, David S.; and Reynolds, Richard G., to Coaxial Scientific Corporation. Communications system for data transmission and retrieval. 3,786,424, Cl. 340-151.000.

Mead, Carver A.: *See—*
Goldman, Arnold J.; Kurtin, Stephen L.; and Mead, Carver A., 3,786,429.

Mead, Carver A.; and McCaldin, James O., to Intel Corporation, mesne. Electroluminescent device. 3,786,315, Cl. 317-234.00r.

Mead Corporation, The: *See—*
Robertson, John A., 3,785,118.

Mechanics Research, Inc.: *See—*
Mull, Michael M., 3,785,203.

Mecklenborg, Richard A., to Singer Company, The. Panoramic infinity image display. 3,785,715, Cl. 350-55.000.

Medwick, Joseph P.; and Thiffault, Marcel. Vehicle jack. 3,785,618, Cl. 254-94.000.

Mehl, Wolfgang: *See—*
Hitchman, Michael L.; Mehl, Wolfgang; and Millot, Jean Pierre, 3,785,948.

Meier, Max: *See—*
Piller, Bernhard; Meier, Max; Duennenberger, Max; Biland, Hans Rudolf; and Luethi, Christian, 3,785,827.

Mejyr, Carl-Anker; and Ledin, Lars Eric, to Primus-Sievert AB. Gas burner device for food grilling. 3,785,361, Cl. 126-41.00r.

Melead, James J.: *See—*
Stafford, Larry O.; Wentworth, William P.; and Melead, James J., 3,785,340.

Memorex: *See—*
Kahn, Michael E., 3,786,457.

Menk, Melvin A., to General Motors Corporation. Clothes washer having a siphon-actuated flood control arrangement. 3,785,181, Cl. 68-208.000.

Merck & Co., Inc.: *See—*
Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., 3,785,879.
Novello, Frederick C.: and Baldwin, John J., 3,786,061.
Schoenewaldt, Erwin F.; and Ihnen, Ernel D., 3,785,927.
Shen, Tsung-Ying; Ruyle, William V.; Fordice, Michael W.; and Jensen, Norman P., 3,786,050.

Merenheimo, Markko; and Ruuska, Mauno, to Valmet Oy. Ski for snow vehicle. 3,785,665, Cl. 280-28.000.

Merenheimo, Markku; and Ruuska, Mauno, to Valmet Oy. Device in connection with the steering ski of a vehicle for improving its control. 3,785,448, Cl. 180-5.00r.

Merl, Wilhelm: *See—*
Durrwachter, Eugen Emil; Harmsen, Ulf; and Merl, Wilhelm, 3,785,810.

Merlin Gerin, Societe Anonyme: *See—*
Laurent, Daniel, 3,786,204.

Merrill, Duane F.; and Lavan, Philip J., to General Electric Company. Method for preparing fast curing silanol-containing organopolysiloxane resins and use of such resins. 3,786,015, Cl. 260-32.8sb.

Merrill, Howard E.; and Lunt, Robert S., III, to Esso Research and Engineering Company. Reforming naphthas with a rhenium-gold catalyst. 3,785,960, Cl. 208-135.000.

Merriman, James R.; Pashley, John H.; Stephenson, Michael J.; and Dunthorn, David I., to United States of America, Atomic Energy Commission. Recovery of purified helium or hydrogen from gas mixtures. 3,785,120, Cl. 55-44.000.

Mesapulse Incorporated: *See—*
Johannessen, Paul R., 3,786,334.

Metaframe Corporation: *See—*
Dinnerstein, Albert J., 3,785,347.

Metallurgie Hoboken-Overpett: *See—*
de Bie, Edouard, 3,785,427.

Metz, Helmut, to Audi NSU Auto Union Aktiengesellschaft. Hinge for a cover. 3,785,006, Cl. 16-184.000.

Meyer, Donald W.: *See—*
Meyer, Fred P.; and Meyer, Donald W., 3,785,072.

Meyer Enterprises, Inc.: *See—*
Meyer, Fred P.; and Meyer, Donald W., 3,785,072.

Meyer, Fred P.; and Meyer, Donald W., to Meyer Enterprises, Inc. Needlepoint blocking device. 3,785,072, Cl. 38-102.500.

Meyer Machine Company: *See—*
D'Angelo, Thomas J.; Strohmeyer, William H.; and Ulbrich, John K., 3,785,358.

Meyer, Wolfgang: *See—*
Eberle, Herbert; Meyer, Wolfgang; and Haase, Johann, 3,785,943.

Meyers, Lavern H.: *See—*
Trent, Edward J.; Meyers, Lavern H.; and Kagele, Frank L., 3,786,234.

Meyfarth, Herbert J.; and Crosby, John J., to Republics Steel Corporation. Coil of continuous elongated material. 3,785,587, Cl. 242-159.000.

Miavecz, Joseph L., to Owens-Illinois, Inc. Border control system for gas discharge display panels. 3,786,484, Cl. 340-324.00m.

Michaels, Louis J.: *See—*
Baker, Ronald Lee, 3,785,411.

Michaelson, Dennis M., to Pan-Technic, Inc. Combination saw. 3,785,053, Cl. 30-394.000.

Michal, Gerhard: *See—*
Moyer-Bertenrath, Jurgen; Kaffarnik, Hans; Rey, Hans-Georg; Michal, Gerhard; and Busch, Ernst-Werner, 3,786,140.

Michon, Gerald J., to General Electric Company. Method and apparatus for sensing radiation and providing electrical readout. 3,786,263, Cl. 250-209.000.

Mickelsson, Olav Conny: *See—*
Palsson, Sven Gunnar; and Mickelsson, Olav Conny, 3,786,286.

Midkiff, James C., to Cincinnati Electronics Corporation, mesne. Radio frequency resistance discriminator having dead zone output characteristic. 3,786,355, Cl. 325-174.000.

Midthun, Robert A.: *See—*
Johnson, B. Neil; and Midthun, Robert A., 3,785,759.

Mieda, Fumio, to Keio Giken Kogiyo Kabushiki Kaisha. Keyboard type electronic musical instrument. 3,786,166, Cl. 84-1.010.

Mikhalsky, Fedor Mikhailovich; Gasparants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich; deceased (by Levi, Mina Neukhovna; administrator). Plant or continuous production of cellulose triacetate in a heterogeneous phase. 3,785,775, Cl. 23-260.000.

Mikkelsen, Stig Glerup, to Radiometer A/S. Measuring equipment, especially for measuring the ph-value of a liquid. 3,786,345, Cl. 324-30.00r.

Milbrandt, Larry F.: *See—*
Peters, Gary J.; Hermann, Stanley R.; Jaynes, Howard R.; and Milbrandt, Larry F., 3,786,013.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Chemically joined, phase separated thermoplastic graft copolymers. 3,786,116, Cl. 260-885.000.

Miller, Bob C. Sequencing valve. 3,785,391, Cl. 137-119.000.

Miller, Dean E., to Caterpillar Tractor Company. Manual override system for a variable volume pump. 3,785,754, Cl. 417-213.000.

Miller, John W. V., to Owens-Illinois, Inc. Conditioning and writing of multiple gas discharge panel. 3,786,474, Cl. 340-324.00m.

Miller, Silas N.: *See—*
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,785,114.

Miller, Stephen R., to Eastman Kodak Company. Film cartridge. 3,785,726, Cl. 352-78.00r.

Millot, Jean Pierre: *See—*
Hitchman, Michael L.; Mehl, Wolfgang; and Millot, Jean Pierre, 3,785,948.

Mills, Roscoe H.: *See—*
Von Ohain, Hans J. P.; Mills, Roscoe H.; and Scolatti, Charles A., 3,785,593.

Milovancevic, Slavko. Non-regenerative switching voltage regulator. 3,786,339, Cl. 323-22.00t.

Minarik, Josef: *See—*
Machacek, Frantisek; Minarik, Josef; Rossa, Lubomir; Koristek, Zdenek; and Brandstadter, Miroslav, 3,785,178.

Minasian, Stephen G., to Hallmark Releasing Corporation. Entertainment accessory package. 3,785,480, Cl. 206-47.00r.

Minck, Kalus: *See—*
Bauer, Adola; Weber, Karl-Heinz; Danneberg, Peter; and Minck, Kalus, 3,786,051.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Surface-coating compositions containing N'-trichloromethylmercaptoindazoles. 3,786,152, Cl. 424-273.000.

Minnesota Mining & Manufacturing Company: *See—*
Jonnes, Nelson, 3,785,719.

Minnesota Mining and Manufacturing Company: *See—*
Fisch, Richard S., 3,785,824.
Packard, James R., 3,786,438.
Rice, David E., 3,786,030.
Stageberg, Wilfred E., 3,785,909.
Wirth, Wayne M., 3,785,184.

Minnick, Leonard John; Webster, William C.; and Smith, Charles L., to Corson, G. & W. H., Inc. Lime-fly ash-sulfite mixtures. 3,785,840, Cl. 106-118.000.

Minolta Camera Co. Ltd.: *See—*
Loseries, Peter; and Hayashi, Toshio, 3,785,264.

Minolta Camera Kabushiki Kaisha: *See—*
Inque, Masayoshi; Nagai, Koji; and Kitaguchi, Shigeo, 3,785,983.

Miottel, Norman O., to General Motors Corporation. Electrostatic powder spraying method and apparatus. 3,786,309, Cl. 317-3.000.

Mira-Pak Inc.: *See—*
Leasure, William C.; and Garcia, Luis, 3,785,112.

Misch, Wolfgang, to Bosch, Robert, G.m.b.H. Regulating arrangement for solenoid valves and the like. 3,786,314, Cl. 317-154.000.

Mischon, Lester, to Singer Company, The. Delayed-action auxiliary stitch cams. 3,785,174, Cl. 66-57.000.

Misenheimer, Reid, to Textron, Inc. Dual axis roll and conveyor system using same. 3,785,468, Cl. 193-35.0md.

Mislin, Roland; and Uehlinger, Hanspeter, to Sandoz Ltd. Phenyl-or naphthyl azo sulfonamidopyrazole dyes. 3,786,040, Cl. 260-162.000.

Mitchel & King Skates Limited: *See—*
Staples, John, 3,785,662.

Mitchell, William O.: *See—*
Hunter, John P., Jr.; Norton, Ross Erle; and Mitchell, William O., 3,785,307.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.
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Mitsubishi Petrochemical Company Limited: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
Ide, Fumio; Kodama, Tsuneu; and Kotake, Yahide, 3,785,921.
Kawai, Atsushi; Suzuki, Migaku; and Ohta, Hidenori, 3,785,918.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Okazaki, Takeo, 3,785,357.

Mitsuoka, Toyokazu, to Industrial Science & Technology, Agency of. Automatically controlled hydrostatic bearing. 3,785,707, Cl. 308-9.000.

Miyama, Hiroshi: *See—*
Kaneko, Masahiko; Miyama, Hiroshi; and Nishida, Jun, 3,786,182.

Miyasaki, Yasukichiro. Static fluid pressure bearings. 3,785,708, Cl. 308-9.000.

Miyasu, Akira: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.

Miyazaki, Gentaro: *See—*
Mouri, Katsuo; and Miyazaki, Gentaro, 3,786,179.

Mizumo, Komei: *See—*
Shibata, Motoo; Higashide, Eiji; Hatano, Kazunori; Mizumo, Komei; Asai, Mitsuko; and Muroi, Masayuki, 3,786,142.

Mobil Oil Corporation: *See—*
Johnson, David E., 3,785,760.
Okorodudu, Abraham O. M., 3,785,982.
Whitehurst, Darrell Duayne, 3,785,968.

Moey, Glenn W.: *See—*
Binger, Wynn S.; Shope, Leonard L.; and Moey, Glenn W., 3,785,705.

Moffitt, Melville M. Electric field proximity safety alarm. 3,786,468, Cl. 340-258.00d.

Mogilny, Dmitry Gavrilovich: *See—*

Feldshtein, Isaak Yakovlevich; Epifanov, Valery Sergeevich; Tsygankov, Vladimir Fedorovich; Pashkov, Alexandr Nikitovich; Mogilny, Dmitry Gavrilovich; and Yakovlev, Mikhail Vasilievich, 3,785,032.

Molaskey, Charles E.; and Starkey, Charles O. Wind deflector for automobiles. 3,785,699, Cl. 296-152.000.

Molex Inc.: *See—*
Horecky, Stanley V., 3,786,402.

Molex, Incorporated: *See—*
Bury, Allen J., 3,786,209.

Molina, Orlando G., to Air Products and Chemicals, Inc., mesne. Dye penetrant inspection process. 3,785,199, Cl. 73-104.000.

Molina, Orlando G., to Rockwell International Corporation. Dye penetrant composition and method of application. 3,786,255, Cl. 250-302.000.

Molins, Limited: *See—*
Preston, Edward George; and Czoch, Jerzy Wladyslaw, 3,785,902.

Moll, John L.: *See—*
Jankowski, Alfred S.; Moll, John L.; and Funk, Ernest J., 3,786,499.

Moller, Bynum W. Golf club swing training device. 3,785,657, Cl. 273-186.00a.

Molls, Hans-Heinz; Hornle, Reinhold; Bucheler, Manfred; Raab, Hans; and Adrio, Joachim, to Bayer Aktiengesellschaft. Method of and apparatus for the continuous concentration of a dispersion containing suspended solid material. 3,785,969, Cl. 210-19.000.

Molyneux, Lindsay. Battery discharge indicators. 3,786,342, Cl. 324-29.005.

Monsanto Company: *See—*
Logomasini, James C.; and Shelby, Richard K., 3,785,761.

Montagna, Angelo A.: *See—*
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,785,964.

Montello Products Company: *See—*
Haase, Willard A.; and Wegenke, Ingwald E., 3,785,742.

Moore, Coleman B., to Moore Products Co. Metering valve. 3,785,616, Cl. 251-121.000.

Moore, Fletcher L., to United States of America, Atomic Energy Commission. Extraction of mercury from alkaline brines. 3,785,803, Cl. 75-121.000.

Moore, James C.; and Leonard, Milton K., to Portland Wire & Iron Works. Rollover protective systems for construction vehicles. 3,785,696, Cl. 296-102.000.

Moore Products Co.: *See—*
Moore, Coleman B., 3,785,616.

Moore, Ronald Charles: *See—*
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Moore, Samuel, & Company: *See—*
Smith, Roy B.; and Sabo, Alex T., 3,785,460.
Whitledge, Jon K.; and Kavick, Edward M., 3,785,050.

Moran, Robert J.: *See—*
Marsilia, Louis P.; and Moran, Robert J., 3,785,208.

Morehead, Edward A.: *See—*
Finley, Donald L.; and Morehead, Edward A., 3,785,062.

Morelle, Jean V. Lipoaminoacids. 3,786,076, Cl. 260-402.500.

Morgan, Fred P.: *See—*
Conkle, Ellsworth V., 3,785,695.

Morganite Carbon, Limited: *See—*
Wiggs, Peter Kenneth Clifford, 3,786,292.

Mori, Kenji: *See—*
Tanimura, Noboru; Mori, Kenji; and Tanaka, Hirosi, 3,785,861.

Mori, Takaaki: *See—*
Tokuyama, Takashi; and Mori, Takaaki, 3,785,043.

Morioka, Masami, to LogEtronics Inc. Automatic film processor having switchable transport path. 3,785,269, Cl. 95-94.00r.

Moroi, Tadahiko: *See—*
Fujii, Heihachi; Kasano, Kazuhiko; Matsuno, Minoru; Moroi, Tadahiko; and Kitamura, Munehiro, 3,786,295.

Morova, Michael A.: *See—*
Albritton, George W.; Wendt, Ronald C.; and Morova, Michael A., 3,785,558.

Morris, Earl L.; and Sally, Theodore J. Tamper-proof, fluid flow control system. 3,785,396, Cl. 137-359.000.

Morrissey, George R.: *See—*
Banjavich, Mark P.; Morrissey, George R.; and Gaudiano, Anthony V., 3,785,160.

Morse, William B.: *See—*
Humphrey, Earl L.; and Morse, William B., 3,785,975.

Mosher, Paul R.: *See—*
MacKenzie, Gerald L.; and Mosher, Paul R., 3,786,139.

Motorola, Inc.: *See—*
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., 3,786,344.
Schafet, Hugo W., 3,786,202.
Terry, Louis E.; and Wilson, Richard W., 3,785,892.
Wilson, William J., 3,786,279.

Motz, Jurgen: *See—*
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Moulds, John W., to General Motors Corporation. Fuel injection system. 3,785,354, Cl. 123-32.0ea.

Mouri, Katsuo; and Miyazaki, Gentaro, to Hitachi, Ltd. Color subcarrier phase shift circuit for color television receiver. 3,786,179, Cl. 178-5.4sd.

Moyer-Bertenrath, Jurgen; Kaffarnik, Hans; Rey, Hans-Georg; Michal, Gerhard; and Busch, Ernst-Werner, to Boehinger Mannheim GmbH. Diagnostic composition and a method of in-vivo determination of the function of the human pancreas. 3,786,140, Cl. 424-7.000.

Mozokhin, Nikolai Gavrilovich: *See—*
Borisov, Jury Modestovich; Budyko, Jury Ivanovich; Dubnitsky, Nikolai Borisovich; Koganer, Valentin Eizerovich; Lisitsyn, Alexandr Ivanovich; Mozokhin, Nikolai Gavrilovich; Maskenskov, Konstantin Mikhailovich; and Dukhnin, Jury Vasilievich, 3,785,353.

Muffly, Robert N., 20% to Lee, Raymond, Organization, Inc., The. Rotatable cord driven passenger carrying disc. 3,785,641, Cl. 272-46.000.

Mugneret, Jean A.: *See—*
Bonnamy, Philippe J. F.; and Mugneret, Jean A., 3,785,511.

Mukai, Kunio: *See—*
Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,786,118.

Mukaiyama, Teruaki; Ueki, Masaaki; and Suzuki, Manabu, to Sankyo Company, Limited. Peptide bond formation in the presence of triaryl phosphites and heterocyclic disulfides. 3,786,038, Cl. 260-112.500.

Mull, Michael M., to Mechanics Research, Inc. Wave force transducer. 3,785,203, Cl. 73-170.00a.

Mullejans, Heinrich: *See—*
Asselborn, Peter; Cramer, Werner; Gladbach, Bergisch; and Mullejans, Heinrich, 3,785,189.

Muller, Artur, to Industrie-Werke Karlsruhe Aktiengesellschaft. Device for winding threads, particularly textile threads. 3,785,140, Cl. 57-100.000.

Muller, Richard, to Gebr. Hofmann KG. Balancing apparatus for balancing out-of-balance bodies. 3,785,210, Cl. 73-459.000.

Muller, Rolf: *See—*
Schmidt, Ewald; Brachet, Hansvilli Von; Muller, Rolf; and Kindler, Horst, 3,786,083.

Muller, Wolfgang, to Haas, Carl, Firma. Process for the production of hubs for spiral springs of timepieces. 3,785,028, Cl. 29-177.000.

Mullerheim, Steven B. Water propulsion systems using submerged propulsion cable. 3,785,326, Cl. 115-7.000.

Mulvany, Richard B.: *See—*
Lissner, Rudolf W.; and Mulvany, Richard B., 3,786,454.

Munson, Robert E.; Polson, Jerry H.; and Roller, Kent G., to Ball Brothers Research Corporation. Self-lubricated rotary joint. 3,786,376, Cl. 333-97.00r.

Munt, Irwin, to Weston Instruments, Inc. Linear input ohmmeter. 3,786,350, Cl. 324-62.00r.

Munz, Paul; and Byland, Hans, to Maschinenfabrik und Giesserei Netstal AG. Device for the production of filled and closed plastic containers. 3,785,116, Cl. 53-194.000.

Murai, Okihiko; and Okubo, Mamoru. Device for holding wire rings in diaphragm clutch. 3,785,466, Cl. 192-89.00b.

Murakami, Masuo; Kawahara, Shigemi; Inukai, Noriyoshi; Nagand, Noriaki; Iwamoto, Hidenori; and Ida, Hisashi, to Yamanouchi Pharmaceutical Company, Ltd. 3-Methyl-N-methyl morphinans. 3,786,054, Cl. 260-285.000.

Murakami, Yuetsu: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,785,880.

Murib, Jawad H.; Schott, Stuart; and Bonecutter, Charles A., to National Distillers and Chemical Corporation. Purification of beryllium hydride. 3,786,128, Cl. 423-122.000.

Muroi, Masayuki: *See—*
Shibata, Motoo; Higashide, Eiji; Hatano, Kazunori; Mizumo, Komei; Asai, Mitsuko; and Muroi, Masayuki, 3,786,142.

Murphy, John E., to Borg-Warner Corporation. Breath testing system with breath temperature sensor. 3,785,774, Cl. 23-254.00e.

Murray, Ransome James, to Associated Portland Cement Manufacturers, Limited, The. Synthetic aggregates. 3,785,842, Cl. 106-288.00b.

Muta, Susumu: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.

Mycroft, Leonora M. Amphibious structure. 3,785,325, Cl. 115-1.00r.

Myers, Ernest L.: *See—*
Huffaker, James E.; Myers, Ernest L.; Dillon, Brian D.; and Dolen, Cecil W., 3,785,039.

Myers, John P.; and Tschapek, Gleb. Audio-digital recording system. 3,786,201, Cl. 179-100.200.

Myhre, Curth: *See—*
Cheldelin, Lyle O.; and Myhre, Curth, 3,785,504.

Myler, George W.: *See—*
Reid, Edward A., Jr.; Venendaal, Robert G.; and Myler, George W., 3,785,364.

Mynard, Brian Arthur; Jones, Bryan; Tracey, Victor Allen; and Betteridge, Walter, to International Nickel Company, Inc., The. Ruthenium or osmium on hard metal. 3,785,783, Cl. 29-182.700.

Naastepad, Pieter Aart; and Van Liempd, Gijsbertus Gerardus, to U.S. Philips Corporation. Method of manufacturing a body having anisotropic permanent magnetic properties by grinding with fatty liquid. 3,785,881, Cl. 148-103.000.

Nadeau, Richard G.: *See—*
Luchsinger, Wayne W.; and Nadeau, Richard G., 3,785,771.

Nadler, Murray, to Esso Research and Engineering Company. Introducing additives in polyolefins. 3,786,018, Cl. 260-32.6pq.

Nagai, Koji: *See—*
Inque, Masayoshi; Nagai, Koji; and Kitaguchi, Shigeo, 3,785,983.

Nagand, Noriaki: *See—*
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Nagao, Masanori: *See—*
Ariyoshi, Yasuo; Nagao, Masanori; Sato, Naotake; Shimizu, Akira; and Kirimura, Jiro, 3,786,039.

Nagasaki, Yoichi, to Nippon Gakki Seizo Kabushiki Kaisha. Toe-holding device for safety ski binding. 3,785,667, Cl. 280-11.35t.

Nagasawa, Toshifumi; and Ohshima, Haruhiko, to Pioneer Electronics Corporation. Automatic telephone answering device with simultaneous message reception and transmission. 3,786,191, Cl. 179-6.00r.

Nagawa, Masatoshi; Suzuki, Yoshio; Matsui, Katsuaki; Iijima, Masaoki; and Tsurusaki, Yoshiyasu, to Sankyo Company Limited. Method of controlling poultry coccidiosis. 3,786,147, Cl. 424-251.000.

Nahta, Roop C.: *See—*
Bernholz, William F.; Nahta, Roop C.; and Redston, John P., 3,785,973.

Naito, Shotaro; Kasama, Ryoji; and Sato, Hiro, to Hitachi, Ltd. Electrical leakage detecting device. 3,786,466, Cl. 340-255.000.

Nakamoto, Taro. Apparatus for sorting and distributing clothing. 3,785,474, Cl. 198-38.000.

Nakamura, Michiharu: *See—*
Sato, Hitoshi; Tanaka, Mitsuo; Nakamura, Michiharu; Takahashi, Susumu; and Kurono, Hirokazu, 3,786,375.

Nakanishi, Yoshitaka. Door locking mechanism. 3,785,684, Cl. 292-241.000.

Nakashio, Seizo; Yoshikawa, Kanji; Takemura, Toshio; and Ota, Kunio, to Sumitomo Chemical Company, Limited. Polyphenylene oxide and ethylene/styrene copolymer blend composition. 3,786,105, Cl. 260-897.00r.

Narahara, Hisaaki; Numakura, Toshihiko; and Watanabe, Yoshimi, to Sony Corporation. Magnetic recording and/or reproducing system. 3,786,176, Cl. 178-5.4cd.

Narumiya, Tsuneaki: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

National Cash Register Company, The: *See—*
Carlson, Carl O., 3,786,417.
Peters, Gary J.; Hermann, Stanley R.; Jaynes, Howard R.; and Milbrandt, Larry F., 3,786,013.
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National Distillers and Chemical Corporation: *See—*
Murib, Jawad H.; Schott, Stuart; and Bonecutter, Charles A., 3,786,128.

National Industrial Research Institute: *See—*
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National Nuclear Corporation: *See—*
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National Patent Development Corporation: *See—*
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National Research Development Corporation: *See—*
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Schofield, Andrew Noel, 3,785,158.

Naumann, Harry K.: *See—*
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Naylor, Walter G., Jr., to Didier, Diane, Enterprises, Inc. Miniature scroll winding and display device. 3,785,075, Cl. 40-94.000.

Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer: *See—*
Schijf, Johannes, 3,785,209.

Nelson, L. R., Corporation, mesne: *See—*
Maple, Steven E., 3,785,563.

Nelson, Lloyd A., to Gerber Products Company. Glass jar handling system. 3,785,516, Cl. 214-152.000.

Nemoto, Mamoru; and Tani, Seijiro, to Hitachi, Ltd. Swash plate type compressor. 3,785,751, Cl. 417-269.000.

Neuhardt, Charles P., to Interface Systems, Limited. Modular building. 3,785,096, Cl. 52-79.000.

Neuworth, Martin B., to Continental Oil Company. Keto substituted alkylidenedithiobisphenols. 3,786,100, Cl. 260-590.000.

Newcombe, Jack: *See—*
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Newton, Emerson H.; Ketteringham, John M.; Sienczyk, John L.; and Isaacson, Calvin M. Regeneration of spent etchant. 3,785,950, Cl. 204-239.000.

Niccoli, George J., to Airguide Instrument Company. Weather indicating instrument. 3,785,339, Cl. 116-129.00r.

Nick, Howard H., to International Business Machines Corporation. Multi-terminal digital signal communication apparatus. 3,786,418, Cl. 340-147.00r.

Nick, Howard H., to International Business Machines Corporation. Synchronizing clock system for a multi-terminal communication apparatus. 3,786,419, Cl. 340-147.0sy.

Niemi, Arvi E.; and Marecek, John R., to Brunswick Corporation. Bowling lane finish applicator. 3,785,001, Cl. 15-245.000.

Niemoeller, Donald E., to Arvin Industries, Inc. Electronically controlled ignition system. 3,785,356, Cl. 123-148.00e.

NIG Mason, Limited: *See—*
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Nihon Netsugaku Kogyo Kabushiki Kaisha: *See—*
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Nihon Polystyrene Kogyo K.K.: *See—*
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Nikkel, Willem Andre, to Westvaco Corporation. Panel counting, collecting and gating apparatus. 3,785,256, Cl. 93-93.00c.

Nippon Electric Co., Ltd.: *See—*
Takahashi, Kousuke, 3,786,428.

Nippon Electric Company, Limited: *See—*
Yamauchi, Fumio, 3,786,447.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Seal Industry Co., Ltd.: *See—*
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Nippon Yakin Kogyo Company, Limited: *See—*
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Nippondenso Co., Ltd.: *See—*
Inque, Goro; and Hoang, Ming-Tsung, 3,786,330.

Nischk, Gunther: *See—*
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Nishida, Jun: *See—*
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Nissan Motor Company, Limited: *See—*
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Nitto Kagyo Co. Ltd.: *See—*
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Noack, Dieter: *See—*
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Noble, James Simon: *See—*
Notley, John Percy William; and Noble, James Simon, 3,786,433.

Noetzel, Siegfried; and Fischer, Edgar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Novel daylight fluorescent pigments and process for preparing them. 3,785,989, Cl. 252-301.20r.

Noggle, Edward F.: *See—*
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Noguchi, Kazuo: *See—*
Amagi, Yasuo; Shiki, Zenya; Ohsumi, Yukihiko; and Noguchi, Kazuo, 3,786,134.

Nomura, Setsuo: *See—*
Komoda, Tsutomu; and Nomura, Setsuo, 3,786,305.

Nomura, Setsuo, to Hitachi, Ltd. Electron gun device of field emission type. 3,786,268, Cl. 250-306.000.

Noor, David A., to Noor Engineering-Manufacturing Corporation. Equipment for conditioning and packaging a product. 3,785,276, Cl. 99-516.000.

Noor Engineering-Manufacturing Corporation: *See—*
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Noranda Mines Limited: *See—*
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Nordling, Frederik, to Lynch Communication Systems, Inc. Pulse sampling and reshaping circuit. 3,786,280, Cl. 307-268.000.

Norgren, Lars Erik, to Sandrik Aktiebolag. Thin chip cutting tool. 3,785,021, Cl. 29-96.000.

Norris, George F.; and Robbins, Gerald K. Mobile home skirting. 3,785,675, Cl. 280-150.00p.

North American Rockwell Corporation: *See—*
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Haffner, James W.; and Pearce, Llewellyn S., 3,786,253.

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Northern Electric Company Limited: *See—*
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Northern Illinois Gas Company: *See—*
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Northrup Corporation: *See—*
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Norton, Ross Erle: *See—*
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Notari, Gennaro V., to Combustion Engineering, Inc. Nuclear reactor core shroud. 3,785,924, Cl. 176-61.000.

Notley, John Percy William; and Noble, James Simon, to Kent, George, Limited. Computer control arrangements. 3,786,433, Cl. 340-172.500.

Notley, Norman T. Method of developing vesicular photographic materials. 3,785,821, Cl. 96-49.000.

Novak, Walter M.; and Thurmond, Fred A., Jr., to Rogers Machinery Company, Inc. Air compressor system. 3,785,755, Cl. 418-85.000.

Novello, Frederick C.; and Baldwin, John J., to Merck & Co., Inc. Pyridyl-trifluoromethylimidazoles. 3,786,061, Cl. 260-296.00r.

Novgorodov, Alexandr Stepanovich: *See—*

Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Politarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.

Novice, Michall A., to Dart Industries, Inc. Hot end coating device. 3,785,851, Cl. 117-54.000.

Nozaki, Chihiro: *See—*
Yasunage, Hidetoshi; Chikatsu, Tatsusuke; Nozaki, Chihiro; and Yoshida, Yoshinori, 3,786,036.

Nugent, Walter Stone. Fastener. 3,785,013, Cl. 24-204.000.

Numakura, Toshihiko: *See—*
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Nutron Corporation: *See—*
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N.V. Optische Industrie "De Oude Delft": *See—*
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Nysten, Bernhard P., to William Prym-Werke K.G., Firma. Attaching of buttons and the like without sewing. 3,785,009, Cl. 24-90.0ta.

Oakite Products, Inc.: *See—*
Frey, Sameul S., 3,785,866.

Oatis, Melvin Neal: *See—*
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Obama, Isamu: *See—*
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Obara, Katsuji. Automatic bag feed system. 3,785,414, Cl. 141-114.000.

Oberwelland, Klaus; and Wiegratz, Siegfried, to Storck, August, G.m.b.H., Firma. Apparatus for producing a packaged assortment of different sweets. 3,785,115, Cl. 53-154.000.

Obuchi, Masao: *See—*
Katayama, Shitomi; Horikawa, Hideichi; Obuchi, Masao; and Ito, Yoshihiro, 3,786,031.

O'Connor, Thomas J. Ram for a reciprocally movable EDM electrode. 3,786,223, Cl. 219-69.00v.

Ogawa, Haruki; Yamamoto, Akihiro; Sugawara, Yutaka; Suzuki, Shigeo; and Takagaki, Yoshio, to Chugai Seiyaku Kabushiki Kaisha. Method of the production of anti-tumor substances. 3,786,141, Cl. 424-95.000.

Ogawa, Heisuke; Yamamoto, Mitsuo; Bando, Seiisaku; and Baba, Osami, to Kawasaki Jukogyo Kabushiki Kaisha and Furuno Electric Company, Limited. Acoustic transducer for deep sea. 3,786,407, Cl. 340-10.000.

Ogita, Hideo: *See—*
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Oguchi, Yutaka; Kubo, Junighi; and Goto, Shinji, to Industrial Science and Technology, Agency of. Method for discharging particulate solid from high pressure vessel. 3,785,966, Cl. 208-213.000.

O'Hara, Mark J.: *See—*
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Ohio Art Company, The: *See—*
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Ohmori, Masaki: *See—*
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Ohmstede Machine Works, Inc.: *See—*
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Ohmstedt, Gene E., to Ohmstede Machine Works, Inc. Method of dismantling tube bundles. 3,785,026, Cl. 29-157.400.

Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, to Fuji Photo Film Co., Ltd. Reciprocating cutting method and apparatus. 3,785,246, Cl. 90-11.00c.

Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, to Fuji Photo Film Co., Ltd. Reciprocating cutting machine. 3,785,247, Cl. 90-15.000.

Ohshima, Haruhiko: *See—*
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Ohsumi, Yukihiko: *See—*
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Ohta, Hidenori: *See—*
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Okada, Yoshio: *See—*
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Okazaki, Takeo, to Mitsui Shipbuilding and Engineering Co., Ltd. Cylinder construction for trunk piston engine. 3,785,357, Cl. 123-195.00r.

Okorodudu, Abraham O. M., to Mobil Oil Corporation. Lubricants containing substituted 2-oxazolidones as oxidation inhibitors. 3,785,982, Cl. 252-51.50a.

Okubo, Mamoru: *See—*
Murai, Okihiko; and Okubo, Mamoru, 3,785,466.

Okui, Sakujiro, to Kodama Brothers Co., Ltd. Radiating system for body warming devices. 3,785,362, Cl. 126-208.000.

Okuma, Yoshiro; and Inuzuka, Keizo, to Nihon Netsugaku Kogyo Kabushiki Kaisha. Cooling and heating unit of air-cooled heat pump type. 3,785,434, Cl. 165-29.000.

Okumura, Tomisaburo, to Matsushita Electronics Corporation. Insulated-gate field-effect transistor. 3,786,319, Cl. 317-235.00a.

Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, to Bridgestone Tire Company Limited and Ube Industries Limited. Manufacturing method for polyamide foam. 3,786,006, Cl. 260-2.50n.

Oleszko, Thaddeus J., to Marathon Oil Company. Asphaltenes for inhibiting polymerization of pyrolysis products. 3,786,110, Cl. 260-679.00r.

Olin Corporation: *See—*
Cianciolo, Alfred D.; Sabatine, Donald J.; Scruggs, James A.; and Trotz, Samuel I., 3,785,890.

Olivetti, Ing. C., & C., S.p.A.: *See—*
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Oltmanns, George F. Insulator and support for electrically charged fence wires. 3,785,619, Cl. 256-10.000.

Omar, Alejandro Goicoechea, to S.A. DeTrenes Vertebrados. Switch for elevated binary railway vehicles. 3,785,294, Cl. 104-130.000.

Omron Tateisi Electronics Co.: *See—*
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Sano, Noboru; and Bando, Yoshihide, 3,786,239.

Ono, Isao; Iiguni, Tetsuo; and Akashi, Mitsumasa, to Rohm and Haas Company. Catalyst for the production of acrolein and acrylic acid. 3,786,000, Cl. 252-464.000.

Onoda Cement Co., Ltd.: *See—*
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Oonishi, Hajimu: *See—*
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Original Hanau Quarzlampen GmbH: *See—*
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Ornstin, A., Limited: *See—*
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Ortlieb, Claude, to Vergo S.A. Method for producing optical polarizing elements. 3,786,119, Cl. 264-2.000.

Orton, Criley; and Ehresman, Allen D., to United States of America, Navy. High speed angle gate. 3,786,508, Cl. 343-7.00a.

O'Shea, Robert P.: *See—*
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Osi, Walter; Thomas, Klaus; Jerchel, Dietrich; and Appel, Karl-Richard, to Boehringer, C. H., Sohn. Fungicidal compositions comprising N,N-bis-((1-amindo-2,2,-trichloro)-ethyl)-piperazines. 3,786,146, Cl. 424-250.000.

Osipov, Eduard Vaganovich: *See—*
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Ostermayer, Franz, to Ciba-Geigy Corporation. (6-Pyrrol-1-yl)-3-pyridineacetic acid derivatives. 3,786,044, Cl. 260-295.50r.

Ostrop, Berthold; Rassmann, Christoph; and Hauschopp, Alois, to Gewerkschaft Eisenhutte Westfalia. Planer mining installation. 3,785,704, Cl. 299-34.000.

Osuga, Hiroshi; and Kobayashi, Shoichi, to Nihon Polystyrene Kogyo K.K. Suspension polymerization process. 3,786,115, Cl. 260-880.00r.

Ota, Kunio: *See—*
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Otani, Junji: *See—*
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Otten, Ernst W.; and Farr, Werner D., to Bruker-Physik AG. Miniature optically pumped magnetometer probe using light pipes to transmit light to the probe. 3,786,340, Cl. 324-.50r.

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Outboard Marine Corporation: *See—*
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Overman, Joseph De Witt. Photographic emulsions and developers containing 2-mercapto heterocyclic compounds. 3,785,822, Cl. 96-66.300.

Owen, Cyril Howard, to Ornstin, A., Limited. Pin-back buttons. 3,785,010, Cl. 24-90.0pr.

Owens-Illinois, Inc.: *See—*
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Pacific Plantronics, Inc.: *See—*
Camenzind, Hans R., 3,786,200.
Packard Instrument Company, Inc.: *See—*
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Packard, James R., to Minnesota Mining and Manufacturing Company. Optical read-only memory system including a cathode ray tube. 3,786,438, Cl. 340-173.00r.
Padovano, Felix, to LP Industria Chimica per l'Anedamento S.p.A. Adjustable mounting assemblies for groups of seats in aircraft or other vehicles. 3,785,600, Cl. 248-188.100.
Paige, Walter Griffin, to Burroughs Corporation. Sealing combination for pneumatic actuator. 3,785,251, Cl. 92-98.00r.
Pak-Well Corporation: *See—*
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Pako Corporation: *See—*
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Palomo-Coll, Antonio Luis. Process for the preparation of N-acylated derivatives of 6-amino penicillanic acid. 3,786,049, Cl. 260-239.100.
Palsson, Jan Fredrik: *See—*
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Palsson, Sven Gunnar; and Mickelsson, Olav Conny, to Isabergs Verkstads AB. Self-interrupting reciprocating motor. 3,786,286, Cl. 310-34.000.
Paly, Polikarp Avidnomovich: *See—*
Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Polikarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.
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Papst, Hermann; Lunde, Hans; and Wrobel, Gunter, to Papst-Motoren KG. Electromotor construction. 3,786,290, Cl. 310-90.000.
Papst-Motoren KG: *See—*
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Parallel Data Systems: *See—*
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Parekh, Hemant. Book prop. 3,785,605, Cl. 248-455.000.
Park, Yong Wan, to National Industrial Research Institute. Method of leaching high silica glass having 0.5-2.0% P_2O_5. 3,785,793, Cl. 65-31.000.
Parker, Amelia Mary. Fish scaler. 3,785,008, Cl. 17-70.000.
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., to PPG Industries, Inc. Diacryloxy esters of anhydrides and coating compositions derived therefrom. 3,785,849, Cl. 117-93.310.
Parker, Gordon M., to PPG Industries, Inc. Method of applying acrylic functional carbonate ester coating to plastic substrates using high energy ionising radiation. 3,785,850, Cl. 117-93.310.
Parry, Frank, to Branson Instruments, Incorporated. Ultrasonic seaming apparatus including feed means. 3,785,910, Cl. 156-580.000.
Parsons, Richard H., to General Motors Corporation. Constant velocity universal joint. 3,785,172, Cl. 64-21.000.
Partridge, Christopher M.: *See—*
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Patchen, Paul J., to Allis-Chalmers Corporation. Lubrication and cooling system for connecting rod and piston. 3,785,459, Cl. 184-6.500.
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Patouillet, Jean, to Societe Anonyme Antar-Petroles de L'Atlantique. Process for carrying out endothermic catalytic reactions. 3,785,953, Cl. 208-49.000.
Patterson, Carol M., to Research Equipment Company, Inc. Cage apparatus. 3,785,344, Cl. 119-17.000.
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Pechacek, Raymond E., to Hahn & Clay. Multilayer pressure vessel method. 3,785,040, Cl. 29-447.000.
Peddinghaus, Werner; and Regenbrecht, Ludwig, said Peddinghaus assor. to said Regenbrecht, Ludwig. Punching or shearing train. 3,785,235, Cl. 83-557.000.
Peet, Robert G.; Foster, Henry O.; Paulsell, Kenneth G.; and Hogshead, Thomas H., Jr., to Du Pont de Nemours, E. I., and Company. Stretching polyethylene terephathalate film in a shortened span. 3,786,127, Cl. 264-288.000.
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Pelzel, Erich. Zinc-aluminum alloy. 3,785,811, Cl. 75-178.00a.
Penick, Ib, to Simpro Corporation of America. Hammer-driven shutter and percussion ignition system. 3,785,260, Cl. 95-11.50r.
Pepper, Kenneth L.: *See—*
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Perin Products Corporation: *See—*
Halperin, Edward B., 3,785,074.
Perkins, Joseph K.: *See—*
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Perronnet, Jacques: *See—*
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Perronnet, Jacques; and Girault, Pierre, to Roussel-UCLAF. Novel phenylhydrazones. 3,786,094, Cl. 260-564.00r.
Perry, Leonard T.; Costner, Donald T.; and Noggle, Edward F., to Wet Manufacturing Co. Rotary sprinkler head. 3,785,565, Cl. 239-206.000.
Perry, Robert J.; and Whitson, Bob L., to Phillips Petroleum Company. Control system for two-stage compressors. 3,785,749, Cl. 417-12.000.
Perry, Walter Merton. Forming unit for fine mineral fibers. 3,785,791, Cl. 65-14.000.
Peters, Arnis E., to Gelatt Investments, Inc., mesne. Microfilm viewer. 3,785,728, Cl. 353-26.000.
Peters, Frank Groom; and Schwartz, Newton, to Bell Telephone Laboratories, Incorporated. Capacitor with anodized electrode of tantalum silcon alloy. 3,786,323, Cl. 317-258.000.
Peters, Gary J.; Hermann, Stanley R.; Jaynes, Howard R.; and Milbrandt, Larry F., to National Cash Register Company, The. Transfer media and transferable coating compositions. 3,786,013, Cl. 260-28.50r.
Peters Machinery Company: *See—*
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Petersen, Warren Eugene, to Western Electric Company Incorporated. Method and apparatus for forming an unsoldered sheath about a strand. 3,785,048, Cl. 29-624.000.
Peterson, Bertil E.; and Housman, Richard J., to Cardwell Westinghouse Company. Cushioned bumper for scrapers. 3,785,679, Cl. 280-481.000.
Peterson, Francis C., to Hager, C., & Sons Hinge Manufacturing Company. Impact die and carbide insert therefor. 3,785,236, Cl. 83-685.000.
Petrakov, Alexandr Ivanovich; Ereskunov, Nikolai Grigorievich; and Galitenko, Mikhail Mitrofanovich. Apparatus for producing impulse liquid jets. 3,785,562, Cl. 239-92.000.
Petrokas, Leonid Venediktovich: *See—*
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Pettersson, Birger; and Karlsson, Kurt, to Svenska Rotor Maskiner Aktiebolag. Rotary regenerative heat exchangers. 3,785,431, Cl. 165-9.000.

Peura, Warren A., to Consolidated Foods Corporation. Roller assembly and method of making the same. 3,785,217, Cl. 74-230.300.

Pfeiffer, Horst, to Hengstler, J., K.G., Firma. Presettable subtracting counter. 3,786,240, Cl. 235-132.00r.

Pfeiffer, Kurt; Dietrich, Johannes; Beckmann, Gunter; and Herkt, Karl-Heinz, to Chemische Werke Huls Aktiengesellschaft. Cooling unit for large polymerization vessels. 3,785,430, Cl. 165-1.000.

Pfingsten, Eddie M.; and Travis, Jerry L. Particulate material distributing means. 3,785,568, Cl. 239-310.000.

Pfizer Inc.: *See—*
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Pharmasel; division of American Hospital Supply Corporation: *See—*
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Phelps, Peter M. Combination gas stripper and cooling tower. 3,785,121, Cl. 55-53.000.

Phillips, Benjamin, to Universal Electric Company. Method for forming self-aligning bearing structures. 3,785,024, Cl. 29-149.50d.

Phillips, Brian Harry; and Young, Robert Gary, to General Electric Company Limited, The. Data terminals. 3,786,415, Cl. 340-146.10d.

Phillips, Edward H.; and Underwood, Raymond D., to Programmed Power Inc. Power conversion apparatus and system therefor. 3,786,335, Cl. 321-69.00r.

Phillips Petroleum Company: *See—*
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Picard, Joseph A. R. Sequencing valve control apparatus and system. 3,785,613, Cl. 251-56.000.

Pieters, Leon Andre, to Image Analysing Computers Ltd. Focusing. 3,786,184, Cl. 178-7.200.

Piiroya, Eduard Karlovich; and Adrat, Mall Felix-Ottomarovna. Printers ink. 3,786,008, Cl. 260-23.00h.

Pike, Brian R., 30% to Schneider, William S., 30% to Schneider, Carl F. and 10% to Rodgers, V. Wayne, Mrs. Method of forming containers and packages. 3,785,111, Cl. 53-14.000.

Pike, Daniel E., to Air Pollution Industries, Inc. Gas collector for steel furnace. 3,785,630, Cl. 266-16.000.

Pilat, Izrail Moiseevich; Samoilovich, Anatoly Grigorievich; Soliichuk, Kornei Denisovich; and Osipov, Eduard Vaganovich. Zinc-cadmium antimonide single crystal anisotropic thermoelement. 3,785,875, Cl. 136-205.000.

Piller, Bernhard; Meier, Max; Duennenberger, Max; Biland, Hans Rudolf; and Luethi, Christian, to Ciba-Geigy AG. Photographic material stabilised against ultraviolet radiation. 3,785,827, Cl. 96-84.00r.

Pinede, Edouard; Barsellotti, John Anthony; and Laliccia, Frederico Riccardo, to International Standard Electric Corporation. Telephone system employing electronic matrix. 3,786,194, Cl. 179-18.0ad.

Pinegin, Vladimir Alexandrovich: *See—*
Badenkov, Petr Fedorovich; Petrokas, Leonid Venediktovich; Portny, Gennady Lazarevich; Pukhova, Regina Lazarevna; Davidovich, Natalia Ivanovna; Roitburd, Isaak Shlemovich; Tsaplin, Nikolai Sergeevich; and Pinegin, Vladimir Alexandrovich, 3,785,905.

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Pippin, Reginald F., Jr. Reaction toy arrangement and method. 3,785,083, Cl. 46-74.00c.

Piroska, Jozsef. Power transmission system. 3,785,249, Cl. 91-41.000.

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Platts, Dennis R., to Ceramic Finishing Company. Method of sintering fused silica ceramic for strengthening it. 3,786,124, Cl. 264-65.000.

Plimi, Frank V., Jr.: *See—*
Galloway, Lawrence H.; Harast, Leonard E.; and Plimi, Frank V., Jr., 3,785,110.

Ploger, Manfred: *See—*
Bergbauer, Axel; Ploger, Manfred; and Seyd, Gunther, 3,785,291.

Plumat, Emile, to Glaverbel S.A. Surface coating of chemically tempered vitreous bodies. 3,785,792, Cl. 65-30.000.

Pluss, Kurt: *See—*
Richter, Carl; Pluss, Kurt; and Feth, Georg, 3,786,056.

Poerink, Jannes Jonge. Platform conveyor. 3,785,476, Cl. 198-189.000.

Polaroid Corporation: *See—*
Avtges, James A.; Reid, Jerome L.; Schlein, Herbert N.; and Taylor, Lloyd D., 3,785,815.
Baker, James G., 3,785,263.
Batter, John F., Jr.; Mason, Paul B.; Stella, Joseph A.; Thomas, Paul W., Jr.; and Wright, Joseph H., 3,785,725.
Land, Edwin H.; Bloom, Stanely M.; and Rogers, Howard G., 3,785,814.
Rickter, Donald O., 3,785,813.

Polidori, Stanley J., Sr.; and Tope, Rockney A. Automatic pet feeder. 3,785,348, Cl. 119-62.000.

Politechnika Warszawska: *See—*
Brzozowski, Zhigniew; Kusmierek, Jadwiga; and Porljko, Stanislaw, 3,786,019.

Pollard, Henry L., to Foremost-McKesson, Inc. Lactose refining process. 3,785,865, Cl. 127-55.000.

Pollmacher, Horst: *See—*
Gappisch, Max; Walter, Friedrich Claus; and Pollmacher, Horst, 3,785,404.

Polrotor, Inc.: *See—*
Hergert, Heinz, 3,785,016.

Polson, Jerry H.: *See—*
Munson, Robert E.; Polson, Jerry H.; and Roller, Kent G., 3,786,376.

Polyakov, Evgeny Valentindvich: *See—*
Vereschagin, Leonid Fedorovich; Konyafv, Jury Sergeevich; Dovbnya, Alexandr Vasilievich; Polyakov, Evgeny Valentindvich; Novgorodov, Alexandr Stepanovich; Asan-Nuri, Abdulia Ogly; Paly, Polikarp Avidnomovich; and Gevorkov, Grigory Sergeevich, 3,785,093.

Polychrome Corporation: *See—*
Deutsch, Albert S.; and Poppo, Joseph M., 3,785,825.

Pomazkova, Zinaida Sirafimovna: *See—*
Bogdanov, Alexandr Antonovich; and Pomazkova, Zinaida Sirafimovna, 3,785,753.

Poole, Donald R.; Stang, Peter L.; and Mars, James E., to Rocket Research Corporation. Crash restraint nitrogen generating inflation system. 3,785,674, Cl. 280-150.0ab.

Pooley, Charles K.: *See—*
Gregg, David P.; and Pooley, Charles K., 3,785,268.

Popp, Roger C., to Chandler Evans, Inc. Differential pressure responsive magnetically actuated switch responsive only to sudden pressure changes. 3,786,211, Cl. 200-83.00t.

Poppo, Joseph M.: *See—*
Deutsch, Albert S.; and Poppo, Joseph M., 3,785,825.

Pori, John R., to Parallel Data Systems. Telemetering system for multichannel data over voice grade telephone lines. 3,786,190, Cl. 179-2.0dp.

Porljko, Stanislaw: *See—*
Brzozowski, Zhigniew; Kusmierek, Jadwiga; and Porljko, Stanislaw, 3,786,019.

Porta Systems Corporation: *See—*
Deluca, Paul V., 3,786,395.

Portage Machine Company: *See—*
Schiler, Frederick S., 3,785,056.

Porter, Henry D.; and Johnson, Benjamin A., to Eastman Kodak Company. Apparatus for the uniform preparation of silver halide grains. 3,785,777, Cl. 23-271.000.

Porter, Richard B.: *See—*
Kabat, John L.; Magnussen, John L.; Porter, Richard B.; and Tobias, James R., 3,785,432.

Porter, Zelma M.: *See—*
McIntire, Nathan E.; and Porter, Zelma M., 3,785,456.

Portland Wire & Iron Works: *See—*
Moore, James C.; and Leonard, Milton K., 3,785,696.

Portny, Gennady Lazarevich: *See—*
Badenkov, Petr Fedorovich; Petrokas, Leonid Venediktovich; Portny, Gennady Lazarevich; Pukhova, Regina Lazarevna; Davidovich, Natalia Ivanovna; Roitburd, Isaak Shlemovich; Tsaplin, Nikolai Sergeevich; and Pinegin, Vladimir Alexandrovich, 3,785,905.

Postal, Robert H. Mechanically readable system using premarked substrate. 3,786,237, Cl. 235-61.11e.

Potter Instrument Company, Inc.: *See—*
Pear, Charles B., Jr., 3,786,181.

Poupitch, Ougljesa Jules: *See—*
Jones, Chesley; and Poupitch, Ougljesa Jules, 3,786,401.

Powell, David B., to General Electric Company. Compact circuit breaker. 3,786,382, Cl. 335-169.000.

Powers Regulator Company, The: *See—*
Taylor, Wesley L., 3,785,390.

Pozniak, Donald J.; and Siewert, Robert M., to General Motors Corporation. Inlet throttled air pump for exhaust emission control. 3,785,152, Cl. 60-290.000.

Pozzetti, Mario, to Finike Italian Marposs-Soc. In Accomandita Semplice di Mario Possate & C. Device for detecting the speed of removal of the chips in a grinding machine. 3,785,091, Cl. 51-165.00r.

PPG Industries, Inc.: *See—*
Carlson, Gordon A., 3,785,942.
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,785,849.
Parker, Gordon M., 3,785,850.

Ppins, Jacob Matthys: *See—*
Reimschussel, George Paul; and Ppins, Jacob Matthys, 3,786,126.

Prayer, Gerard; and Ferrat, Jean-Marie, to Cebal GP. Lid for easy opening cans. 3,785,522, Cl. 220-54.000.

Pressman, Gerald L.; and Kittredge, Thomas D., to Electro Print, Inc., mesne. Method and apparatus for charged aperture controlled electrostatic image reproduction. 3,786,514, Cl. 346-74.0es.

Preston, Edward George; and Czoch, Jerzy Wladyslaw, to Molins, Limited. Web feeding and splicing device. 3,785,902, Cl. 156-351.000.

Preston, Gerald, to Lee, Raymond, Organization, Inc., The. Cleaner for forks. 3,784,999, Cl. 15-218.100.

Preston, Larry T. Magnetic tape reel setup. 3,785,482, Cl. 206-53.000.

Price, David Watkin; Sidebottom, Ronald; Briscoe, Murray George; and Moore, Ronald Charles, to Coal Industry (Patents) Limited. Polyvinyl chloride resin composition closely simulating a grass playing surface in its bounce characteristics. 3,786,011, Cl. 26-22.0cb.

Price, Joe C. Revolver cylinder reloader. 3,785,077, Cl. 42-89.000.

Priebe, Frank D.: *See—*
Kelseaux, Ray M.; Dobbs, Harold J.; and Priebe, Frank D., 3,785,202.

Priebe, Henry Fred, Jr., to Bell Telephone Laboratories, Incorporated. Spectrum analyzer with simultaneous display for plural frequency bands. 3,786,351, Cl. 324-77.00b.

Primus-Sievert AB: *See—*
Mejyr, Carl-Anker; and Ledin, Lars Eric, 3,785,361.

Pritchett, Robert Leonard: *See—*
Hetherington, Irvine Keers; Pritchett, Robert Leonard; and York, Robert Kenneth, 3,786,425.

Privon, George T.: *See—*
Buonocore, Salvatore; Stenger, Harvey G.; and Privon, George T., 3,785,453.

Process Systems, Inc.: *See—*
Friedland, Harry; and Langill, Addison W., Jr., 3,785,389.

Proctor, Frank Hanslow, to Transmission Developments, Limited. Electrical insulator having sheds arranged at an angle to its axis. 3,786,175, Cl. 174-211.000.

Proctor, Robert H., to Jackes-Evans Manufacturing Company, mesne. Temperature responsive throttling valve. 3,785,554, Cl. 236-34.000.

Programmed Power Inc.: *See—*
Phillips, Edward H.; and Underwood, Raymond D., 3,786,335.

Progress Tool and Engineering Co., Inc.: *See—*
Van Lahr, Leo F., 3,785,182.

Prye, Stanley Peter. Parting and bevel burning device. 3,785,631, Cl. 266-23.00r.

Pryor, Tomothy R.; and Hageniers, Omep L. Separation measurement method and devices employing diffraction waves. 3,785,737, Cl. 356-111.000.

Puariea, Douglas A.: *See—*
Barnard, Benjamin R.; and Puariea, Douglas A., 3,785,297.

Puckett, Jason N., Jr.; Kurtin, Stephen L.; and Goldman, Arnold J., to Lexitron Corporation. Apparatus for generating and displaying characters by tracing continuous strokes. 3,786,482, Cl. 340-324.00a.

Pukhov, Georgy Evgenievich; Borkovsky, Boris Adamovich; Belik, Viktor Kirillovich; Romantsov, Vladimir Petrovich; and Katkov, Alexandr Fedorovich. Device for intergrating and differentiating discrete functions. 3,786,241, Cl. 235-183.000.

Pukhova, Regina Lazarevna: *See—*
Badenkov, Petr Fedorovich; Petrokas, Leonid Venediktovich; Portny, Gennady Lazarevich; Pukhova, Regina Lazarevna; Davidovich, Natalia Ivanovna; Roitburd, Isaak Shlemovich; Tsaplin, Nikolai Sergeevich; and Pinegin, Vladimir Alexandrovich, 3,785,905.

Pullman Incorporated: *See—*
Berry, Walter V.; and Hunziker, Paul J., 3,785,296.

Pun, John Y. Coil forming apparatus method and galvo-motor product. 3,786,353, Cl. 324-154.000.

Purcell, Robert F.: *See—*
Sausaman, David K.; and Purcell, Robert F., 3,785,855.

Purlov, Jury Nikolaevich: *See—*
Mikhalsky, Fedor Mikhailovich; Gasparants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Purolator, Inc.: *See—*
Dudinec, Emery; and Wilhelm, John R., 3,785,491.
Szmutko, Charles J., 3,785,129.

PVO International Inc.: *See—*
Bernholz, William F.; Nahta, Roop C.; and Redston, John P., 3,785,973.

Quaker Oats Company, The: *See—*
Hyldon, Roy G., 3,785,425.

Quebec Iron & Titanium Corporation: *See—*
Chlu, Shiu-Tang, 3,786,133.

Quesinberry, Arden L.; and Lawson, Edward J., to Westinghouse Electric Corporation. Circuit and method for arc protection of oinear beam devices. 3,786,275, Cl. 307-136.000.

Quinlan, William J.; and Huver, Lawrence L., to Hastings Manufacturing Company. Windshield wiper assembly. 3,785,002, Cl. 15-250.360.

Quinn, Brian P., to United States of America, Air Force. Aerodynamic nozzles in rectangular duct. 3,785,405, Cl. 138-39.000.

Raab, Hans: *See—*
Molls, Hans-Heinz; Hornle, Reinhold; Bucheler, Manfred; Raab, Hans; and Adrio, Joachim, 3,785,969.

Rabinowitz, Paul: *See—*
Chimenti, Robert J. L.; and Rabinowitz, Paul, 3,786,366.

Radici, Pierino: *See—*
Ackermann, Jacob; and Radici, Pierino, 3,786,026.

Radiometer A/S: *See—*
Mikkelsen, Stig Glerup, 3,786,345.

Rain Jet Corporation: *See—*
Hruby, John O., Jr., 3,785,559.
Hruby, John O., Jr., 3,785,560.

Rajnoha, Jaroslav; Bures, Ladislav; and Orlici, Usti Nad, to Elitex, Zavody Textilniho Strojirenstvi. Spinning unit for open end spinning machine. 3,785,138, Cl. 57-58.950.

Ramirez, Ramon, to Lee, Raymond, Organization, Inc., The. Iron pad. 3,785,599, Cl. 248-117.200.

Ramsey, Thomas Haliburton: *See—*
McMahon, William Raymond; and Ramsey, Thomas Haliburton, 3,785,937.

Rank Organisation, Limited, The: *See—*
Whitehouse Joseph Colin; and Wild, Colin Arthur, 3,786,278.

Rapoza, Edward J.: *See—*
Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalez, Roger A.; and Smith, John A., 3,785,533.

Rapp, James E., to Owens-Illinois, Inc. Glasses of the Na_2O-K_2O-Nb_2O_5-SiO_2 system and glass ceramics made therefrom. 3,785,833, Cl. 106-39.600.

Rapp, James Erich, to Owens-Illinois, Inc. Glasses, glass-ceramics and process for making same. 3,785,834, Cl. 106-39.600.

Rassmann, Christoph: *See—*
Ostrop, Berthold; Rassmann, Christoph; and Hauschopp, Alois, 3,785,704.

Rateko Oy: *See—*
Kiukkonen, Olli Juhani, 3,785,295.

Ray, Robert A.: *See—*
Woods, Thomas C.; and Ray, Robert A., 3,786,352.

Raytheon Company: *See—*
Chramiec, Mark A.; and Konrad, William L., 3,786,405.
Collins, John D., 3,786,504.
Schulz, Manfred B.; and Holland, Melvin G., 3,786,373.

RCA Corporation: *See—*
Bazin, Lucas John, 3,786,177.
Grill, William Augustus, 3,785,862.
Hannan, William James, 3,785,712.
Hill, Michael Walter, 3,786,300.
Lockwood, Harry Francis, 3,785,884.
Shrader, Terry Monroe, 3,786,185.
Wheatley, Carl F., Jr., 3,786,364.

Recognition Equipment, Incorporated: *See—*
Bhimani, Chetan Vijaysinh, 3,786,416.

Reddick, Willis C., to International Telephone & Telegraph Corporation. Microphone mounting. 3,786,203, Cl. 179-146.00r.

Redemann, Hubert, to Linde Aktiengesellschaft. Expansion turbine separator. 3,785,128, Cl. 55-405.000.

Redington, Rowland W.: *See—*
Wilson, Ronald H.; Blumenfeld, Samuel M.; Redington, Rowland W.; and Rosczak, Joseph S., 3,786,294.

Redman Heenan Froude Limited: *See—*
McLean, Norman; Lewis, Donald Bernard; and McLaren, Robert John Lawson, 3,785,216.

Redmore, Derek, to Petrolite Corporation. Quinoline nitrogen-heterocyclic phosphonates. 3,786,055, Cl. 260-283.00p.

Redston, John P.: *See—*
Bernholz, William F.; Nahta, Roop C.; and Redston, John P., 3,785,973.

Reese Products, Inc.: *See—*
Good, Arthur L.; and Reese, Robert P., 3,785,680.

Reese, Robert P.: *See—*
Good, Arthur L.; and Reese, Robert P., 3,785,680.

Reflectemorphics, Inc.: *See—*
Barnes, Clarence A., Jr.; and Fontaine, Alan, 3,785,819.

Regan, Thomas. Tamper-proof odometer. 3,785,551, Cl. 235-95.000.

Regenbrecht, Ludwig: *See—*
Peddinghaus, Werner; and Regenbrecht, Ludwig, 3,785,235.

Reibold, Robert C. Moment activated transducer. 3,786,285, Cl. 310-8.500.

Reichert, C., Optische Werke AG: *See—*
Sitte, Hellmuth, 3,785,234.

Reichold Chemicals, Inc., mesne: *See—*
Krause, Arthur Waldemar; and Hannah, Malcolm Edward, 3,786,037.

Reid, Colin David; and Ritchie, Ian Daniel, to United Kingdom Atomic Energy Authority. Methods and apparatus for distinguishing between bodies according to their translucency. 3,786,266, Cl. 250-222.00r.

Reid, Edward A., Jr.; Venendaal, Robert G.; and Myler, George W., to Columbia Gas System Service Corporation. Smooth top range. 3,785,364, Cl. 126-39.00j.

Reid, Jerome L.: *See—*
Avtges, James A.; Reid, Jerome L.; Schlein, Herbert N.; and Taylor, Lloyd D., 3,785,815.

Reilly, Philip E.: *See—*
Ewing, James O.; and Reilly, Philip E., 3,786,404.

Reim, Thomas E.: *See—*
Kylin, Donald H.; and Reim, Thomas E., 3,786,251.

Reimschussel, George Paul; and Ppins, Jacob Matthys, to Johns-Manville Corporation. Method for making a disposable face respirator. 3,786,126, Cl. 264-87.000.

Reinke, Friedhelm: *See—*
Seulen, Gerhard; and Reinke, Friedhelm, 3,785,883.

Reis, Walter. Method of casting and subsequently deburring of workpieces and a device for carrying out the method. 3,785,045, Cl. 29-527.000.

Rel-Reeves, Inc., mesne: *See—*
Lubkin, Samuel, 3,786,422.

Reliable Automatic Sprinkler Company, Inc., The: *See—*
Shea, Edward T., 3,785,440.

Reliance Electric Company: *See—*
Kuhl, Joseph W.; and Lauer, Robert J., 3,785,463.

Remper, John A.: *See—*
King, Larry K.; Knapp, Lester L.; Schoener, Ronald C.; Kloap, Nicholas; Starner, Bernard M.; and Remper, John A., 3,786,135.

Renfrew, Edgar Earl, to American Aniline Products, Inc. Polyester fibers dyed with methylidynebis pyrazolone dyestuffs. 3,785,769, Cl. 8-179.000.

Rennicke, Kenneth A.: *See—*
Gatz, William L.; and Rennicke, Kenneth A., 3,785,512.

Rennie, John Coyne. Self-contained navigation system. 3,786,505, Cl. 343-7.0ed.

Republic Industrial Corporation: *See—*
Bush, Jack A., 3,785,660.

Republic Steel Corporation: *See—*
Kylin, Donald H.; and Reim, Thomas E., 3,786,251.

Republics Steel Corporation: *See—*
Meyfarth, Herbert J.; and Crosby, John J., 3,785,587.

Research Corporation: *See—*
Johnson, William H., 3,785,385.

Research Equipment Company, Inc.: *See—*
Patterson, Carol M., 3,785,344.

Retsel Inc.: *See—*
Sargent, Robert J., 3,785,694.

Reusser, Robert E.; and Turk, Stanley D., to Phillips Petroleum Company. Olefin disproportionation catalyst. 3,786,112, Cl. 260-683.00d.

Rey, Hans-Georg: *See—*
Moyer-Bertenrath, Jurgen; Kaffarnik, Hans; Rey, Hans-Georg; Michal, Gerhard; and Busch, Ernst-Werner, 3,786,140.

Reynolds, David J., to Buckeye Steel Castings. Cushion mounting bearing adapter for railway trucks. 3,785,298, Cl. 105-218.00r.

Reynolds, George A.: *See—*
Drexhage, Karl H.; Reynolds, George A.; and Specht, Donald P., 3,786,369.

Reynolds, R. J., Tobacco Company: *See—*
Spencer, Gilbert W., 3,785,487.

Reynolds, Richard G.: *See—*
McVoy, David S.; and Reynolds, Richard G., 3,786,424.

Reynolds, Zack D.: *See—*
Brown, Caroll J.; Chesarek, Donald J.; Fisk, Dale E.; Ma, Joseph T.; Martin, Harold F.; and Reynolds, Zack D., 3,786,479.

Rheinmetall G.m.b.H.: *See—*
Hartman, Rolf, 3,785,242.

Rheinstahl Huttenwerke: *See—*
Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, 3,785,632.

Rhinehart, Vance E.; Coffelt, James D.; and Yother, Floyd G., to Cumberland Corporation. Automated systems for raising and transporting broilers. 3,785,345, Cl. 119-18.000.

Rhone-Poulenc S.A.: *See—*
Aviron-violet, Paul; and Colleuille, Yves, 3,786,069.

Ribka, Joachim; and Schwerin, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for improving a disazo pigment. 3,785,843, Cl. 106-288.00q.

Riccio, Pasquale R., to Ciba-Geigy Corporation. Compressed air operated dispenser with air compression piston means movable laterally of the dispenser. 3,785,530, Cl. 222-193.000.

Rice, David E., to Minnesota Mining and Manufacturing Company. Catalyst for trimerizing polyisocyanates. 3,786,030, Cl. 260-77.5nc.

Rich, Everett W. Erratic movement tethered ball striking toy. 3,785,643, Cl. 272-78.000.

Richards, Powell; Susskind, Herbert; and Stang, Louis G., Jr., to United States of America, Atomic Energy Commission. Detection of impaired pulmonary function. 3,785,370, Cl. 128-2.080.

Richardson Company, The: *See—*
Stone, Leslie F., 3,785,412.

Richter, Carl; Pluss, Kurt; and Feth, Georg, to Cilag-Chemie, A.G. Adamantyl urea derivatives. 3,786,056, Cl. 260-293.560.

Richter, Sidney B.: *See—*
Krenzer, John; and Richter, Sidney B., 3,786,088.

Rickter, Donald O., to Polaroid Corporation. Polycyclic hydropyrimidine development restrainers. 3,785,813, Cl. 96-3.000.

Ricoh Co., Ltd.: *See—*
Yanagawa, Noboyuki; and Yamada, Oimachi, 3,785,732.
Yanagawa, Nobuyuki, 3,785,486.

Ricoh Company, Ltd.: *See—*
Kawa, Ryuichi, 3,786,360.

Ridley, John Cecil. Fluid pressure operated rotary actuators. 3,785,214, Cl. 74-89.210.

Ries, Donald L., to Rockwell International Corporation. Self-contained power transmitting assembly. 3,785,449, Cl. 180-6.480.

Rikis, Vitolds: *See—*
Schiff, Otto M.; and Rikis, Vitolds, 3,785,270.

Rimbach, Andrew, Jr., to Bell Telephone Laboratories, Incorporated. Mixed traffic mobile radio system. 3,786,199, Cl. 179-41.00a.

Rinaldi, Joseph A.: *See—*
Fulton, James F.; and Rinaldi, Joseph A., 3,785,693.

Riseman, Jacob: *See—*
Ho, Irving T.; and Riseman, Jacob, 3,786,445.

Rishovd, Sigurd A., to Royal Industries, Inc. Tire bead seater. 3,785,424, Cl. 157-1.100.

Ritchie, Ian Daniel: *See—*
Reid, Colin David; and Ritchie, Ian Daniel, 3,786,266.

Ritzenhoff, Hermann, to Gerbruder Seidel KG. Support for mounting small parts in electroplating processes. 3,785,952, Cl. 204-297.00w.

Robbins, Gerald K.: *See—*
Norris, George F.; and Robbins, Gerald K., 3,785,675.

Robbins, Kenneth W.: *See—*
Ross, Gerald F.; Matthews, Hugh B.; and Robbins, Kenneth W., 3,786,413.

Roberti, Giorgio; Dufour-Berte, Casimiro; and Pasero, Edoardo, to Centro Sperimental Metallurgico, S.p.A. Method for extracting and separating iron and non-ferrous metals, from ferrous materials. 3,785,802, Cl. 75-26.000.

Robertson, John A., to Mead Corporation, The. Apparatus and method for electrical precipitation. 3,785,118, Cl. 55-5.000.

Robinson, Morton; and Devor, Donald P., to Hughes Aircraft Company. Laser materials from calcium fluoride-rare earth fluoride expanded lattice structures. 3,786,365, Cl. 331-94.500.

Robinson, Murry M. Cutting punches for destroying hypodermic syringes. 3,785,233, Cl. 83-167.000.

Robinson, Thomas L., to Astronics Corporation. Solid state electroluminescent X-Y display panels. 3,786,307, Cl. 315-169.0tv.

Rochette, William: *See—*
Houston, Edward F.; Wallace, Robert L.; Rochette, William; and Chaponis, Charles A., 3,786,207.

Rocket Research Corporation: *See—*
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Rockwell International Corporation: *See—*
Molina, Orlando G., 3,786,255.
Ries, Donald L., 3,785,449.

Rodgers, V. Wayne, Mrs.: *See—*
Pike, Brian R., 3,785,111.

Roesch, Karl, Inc.: *See—*
Castellana, Frank S.; Liker, Jack; and Kokolis, Steve, 3,786,228.

Rogers, George H. Self-cleaning aquarium. 3,785,342, Cl. 119-5.000.

Rogers, Howard G.: *See—*
Land, Edwin H.; Bloom, Stanely M.; and Rogers, Howard G., 3,785,814.

Rogers Machinery Company, Inc.: *See—*
Novak, Walter M.; and Thurmond, Fred A., Jr., 3,785,755.

Rohm & Haas Company: *See—*
Mattei, Victor; and Lane, Constance A., 3,785,848.
Zdanowski, Richard E., 3,785,860.

Rohm and Haas Company: *See—*
Emmons, William D., 3,786,020.
Ono, Isao; liguni, Tetsuo; and Akashi, Mitsumasa, 3,786,000.

Rohn, William C. Deep trolling reel with temperature monitoring capability. 3,785,079, Cl. 43-4.000.

Rohosy, Soma M.: *See—*
Frye, Kenneth G.; Lucas, Robert G.; Seidel, Kenneth L.; and Rohosy, Soma M., 3,785,232.

Rohrbaugh, Donald G., to Beckman Instruments, Inc. Chemical analysis tube module. 3,785,773, Cl. 23-253.00r.

Rohrig, Klaus: *See—*
Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, 3,785,632.

Roitburd, Isaak Shlemovich: *See—*
Badenkov, Petr Fedorovich; Petrokas, Leonid Venediktovich; Portny, Gennady Lazarevich; Pukhova, Regina Lazarevna; Davidovich, Natalia Ivanovna; Roitburd, Isaak Shlemovich; Tsaplin, Nikolai Sergeevich; and Pinegin, Vladimir Alexandrovich, 3,785,905.

Roller, Kent G.: *See—*
Munson, Robert E.; Polson, Jerry H.; and Roller, Kent G., 3,786,376.

Romantsov, Vladimir Petrovich: *See—*
Pukhov, Georgy Evgenievich; Borkovsky, Boris Adamovich; Belik, Viktor Kirillovich; Romantsov, Vladimir Petrovich; and Katkov, Alexandr Fedorovich, 3,786,241.

Rompa, Jozef Johannes Theresia. Air line oilers. 3,785,461, Cl. 184-55.00a.

Ronci, Fernando M. Molded shoe and reinforcement therefore. 3,785,067, Cl. 36-4.000.

Rondestvedt, Christian Scriver, Jr., to Du Pont de Nemours, E. I., and Company. Fluorinated acrylic monomers containing hetero atoms and their polymers. 3,786,089, Cl. 260-561.00s.

Roos, Bjorn-Erik: *See—*
Corrodi, Hans Rudolf; Lycke, Nils Erik Oskar; and Roos, Bjorn-Erik, 3,786,143.

Ropson, Robert: *See—*
Flowerday, Peter; and Ropson, Robert, 3,785,977.

Rosch, Eduard, to Dixi S.A. Interference suppression device for logic signals. 3,786,276, Cl. 307-208.000.

Rosczak, Joseph S.: *See—*
Wilson, Ronald H.; Blumenfeld, Samuel M.; Redington, Rowland W.; and Rosczak, Joseph S., 3,786,294.

Rosenberg, Edgar N., to United States of America, Navy. Spherical module connectors. 3,785,313, Cl. 114-.50t.

Rosenquest, John B., Jr., to Dorr-Oliver, Incorporated. Swash-type impeller pumps. 3,785,574, Cl. 241-15.000.

Ross, Francis D., to Northrop Corporation. Chemical processing facility. 3,785,387, Cl. 134-95.000.

Ross, Gerald F.; Matthews, Hugh B.; and Robbins, Kenneth W., to Sperry Rand Corporation. Vehicle tire condition monitor system. 3,786,413, Cl. 340-58.000.

Ross, Milton Dean: *See—*
Busler, Willard Leroy; Ross, Milton Dean; and Schwartzer, Thomas Edward, 3,785,035.

Rossa, Lubomir: *See—*
Machacek, Frantisek; Minarik, Josef; Rossa, Lubomir; Koristek, Zdenek; and Brandstadter, Miroslav, 3,785,178.

Rosskopf, Philip A.: *See—*
Peppler, Richard B.; and Rosskopf, Philip A., 3,785,839.

Roszkowski, Gregory J., to Bio-Medical Sciences, Inc. Temperature indicator. 3,785,336, Cl. 116-114.500.

Roth, Robert A.: *See—*
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Roth, Walter: *See—*
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Rothmans, Carreras, Limited: *See—*
Sylvester, Herbert A.; Partridge, Christopher M.; and Goss, Ira D., 3,785,384.

Rotondi, Paul C., to Dan Dee Belt & Bag Company, Inc. Method for manufacturing belts. 3,785,893, Cl. 156-198.000.

Rouse, Paul L.: *See—*
Francis, Robert L.; and Rouse, Paul L., 3,785,134.

Roussard, Richard D. Portable electric scatterbox for power distribution on a construction site. 3,786,312, Cl. 317-112.000.

Roussel, Jean, to SCAL, Societe de Conditionnements en Aluminium. Collapsible multi-compartment container. 3,785,545, Cl. 229-51.0db.

Roussel-UCLAF: *See—*
Bertin, Daniel; Perronnet, Jacques; and Teche, Andre, 3,785,800.
Girault, Pierre; and Hagemann, Guy, 3,786,151.
Martel, Jacques; and Buendia, Jean, 3,786,070.
Perronnet, Jacques; and Girault, Pierre, 3,786,094.

Rowe International, Inc.: *See—*
Kurimsky, Albert, 3,786,206.

Rowell, Lorne A.; and Cartmell, James H., to Imasco Limited. Rotary tobacco dryer. 3,785,765, Cl. 432-107.000.

Royal Industries, Inc.: *See—*
Rishovd, Sigurd A., 3,785,424.

Royal Industries, Inc., mesne: *See—*
Sosalia, Harry, 3,785,441.

Royal Industries, mesne: *See—*
Gatz, William L.; and Rennicke, Kenneth A., 3,785,512.

Rubio, Manuel Jesus; and Leal, Victor Mario, to Barrera, Roberto Gonzalez. Determining hardness of soft materials. 3,785,201, Cl. 73-169.000.

Rudenko, Pavel Petrovich: *See—*
Mikhalsky, Fedor Mikhailovich; Gaspariants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Rudolph, Hans-Heinrich: *See—*
Bendler, Hellmut; Brede, Uwe; Gawlick, Heinz; and Rudolph, Hans-Heinrich, 3,785,292.

Ruggeberg, August, Firma: *See—*
Holzhauer, Rudolf, 3,785,094.

Ruse, Edward: *See—*
Talbot, Richard C.; Ruse, Edward; and Roth, Robert A., 3,785,255.

Ruskin, Sol. Exercising device. 3,785,646, Cl. 272-57.00d.

Russell, Ronald W.: *See—*
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Ruti Machinery Works Ltd.: *See—*
Strauss, Edgar H., 3,785,408.

Ruuska, Mauno: *See—*
Merenheimo, Markko; and Ruuska, Mauno, 3,785,665.
Merenheimo, Markku; and Ruuska, Mauno, 3,785,448.

Ruyle, William V.: *See—*
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Ryabtsev, Alexei Nikolaevich: *See—*
Mikhalsky, Fedor Mikhailovich; Gaspariants, Artemy Mikhailovich; Purlov, Jury Nikolaevich; Kulesh, Pavel Ivanovich; Rudenko, Pavel Petrovich; Ryabtsev, Alexei Nikolaevich; and Levi, Yakov Efimovich, 3,785,775.

Ryan, Jack E.; and Collin, Sylvan, to Dorwin, Walter League Associates Incorporated. Water purification apparatus. 3,785,490, Cl. 210-109.000.

Rynbrandt, Ronald H.; Cerda, Elisabeth S.; and Schmidt, Fredericka L., to Upjohn Company, The. Method of treating hyperglycemia. 3,786,156, Cl. 424-305.000.

Rynbrandt, Ronald H.; and Schmidt, Fredericka L., to Upjohn Company, The. Method of treating hyperglycemia. 3,786,157, Cl. 424-317.000.

S.A. DeTrenes Vertebrados: *See—*
Omar, Alejandro Goicoechea, 3,785,294.

Sabatine, Donald J.: *See—*
Cianciolo, Alfred D.; Sabatine, Donald J.; Scruggs, James A.; and Trotz, Samuel I., 3,785,890.

Sabo, Alex T.: *See—*
Smith, Roy B.; and Sabo, Alex T., 3,785,460.

Safe Well Manufacturing Company: *See—*
Handeland, George A., 3,785,525.

Sahs, Leonard J., to Amana Refrigeration, Inc. Noise reduction means for connecting refrigerant compressors in air conditioners. 3,785,167, Cl. 62-296.000.

Saiko, Alphons: *See—*
Spieldiener, Reinhold; Saiko, Alphons; and Spieldiener, Robert, 3,785,663.

Saint-Gobain: *See—*
Halberschmidt, Friedrich; and Audi, Josef, 3,785,229.

Salewsky, Gert, to Audi NSU Auto Union Aktiengesellschaft. Safety bracket for a motor car. 3,785,671, Cl. 280-87.00r.

Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,785,396.

Salomon, Georges Pierre. Device for changing the longitudinal position of a ski binding. 3,785,666, Cl. 280-11.35t.

Salzdetfurth AG: *See—*
Eberle, Herbert; Meyer, Wolfgang; and Haase, Johann, 3,785,943.

Sam, Ahmad. Method for making abrasive articles. 3,785,938, Cl. 204-16.000.

Sama, Nicholas. Filtering device. 3,785,494, Cl. 210-169.000.

Samoilovich, Anatoly Grigorievich: *See—*
Pilat, Izrail Moiseevich; Samoilovich, Anatoly Grigorievich; Soliichuk, Kornei Denisovich; and Osipov, Eduard Vaganovich, 3,785,875.

Sandau, Hartmut, to Bosch, Robert, G.m.b.H. Radially yielding cylinder and piston arrangement. 3,785,253, Cl. 92-181.000.

Sander, Paul F., to I. O. Prague Corporation. Theft deterrent for office machines, television sets and small factory tools. 3,785,183, Cl. 70-58.000.

Sandoz Ltd.: *See—*
Frey, Walter; and Toth, Istvan, 3,786,073.
Mislin, Roland; and Uehlinger, Hanspeter, 3,786,040.

Sandoz-Wander, Inc.: *See—*
Schmutz, Jean; Hunziker, Fritz; and Kunzle, Franz Martin, 3,786,145.

Sandrik Aktiebolag: *See—*
Norgren, Lars Erik, 3,785,021.

Sandy Hill Corporation: *See—*
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Sankyo Company, Limited: *See—*
Mukaiyama, Teruaki; Ueki, Masaaki; and Suzuki, Manabu, 3,786,038.
Nagawa, Masatoshi; Suzuki, Yoshio; Matsui, Katsuaki; Iijima, Masaoki; and Tsurusaki, Yoshiyasu, 3,786,147.

Sano, Noboru; and Bando, Yoshihide, to Omron Tateisi Electronics Co. Programming apparatus. 3,786,239, Cl. 235-92.0pe.

Sansui Electric Co., Ltd.: *See—*
Iida, Hiroshi, 3,786,283.

Sanyo Chemical Company Ltd.: *See—*
Yonezawa, Toyozo, 3,786,079.

Saponara, Domenick, to International Telephone and Telegraph Corporation. Control apparatus. 3,786,273, Cl. 307-117.000.

Saponara, Domenick, to International Telephone and Telegraph Corporation. Control apparatus. 3,786,274, Cl. 307-117.000.

Sargent, Robert J., to Retsel Inc. Flexible cover assembly. 3,785,694, Cl. 296-98.000.

Sartorio, Franco, to D.E.A. Digital Electronic Automation S.p.A. Structure for measuring machines, machine tools and the like immune from the influence of variable, fixed or mobile loads acting on it, including the weight of the workpieces and from the infuence of the ground to which it is connected. 3,785,743, Cl. 408-143.000.

Sartorius, Guy, to Societe des Aciers Fins de l'Est. Process and apparatus for monitoring and control of metallurgical furnaces. 3,786,161, Cl. 13-12.000.

Sata, Masami: *See—*
Yamashita, Yutaka; and Sata, Masami, 3,785,988.

Satchell, Eric William, to Duraframe Systems Pty., Ltd., mesne. Roof trusses. 3,785,108, Cl. 52-645.000.

Satierfield, Richard Alan, to Northrup Corporation. Contrast detector for video tracking system. 3,786,183, Cl. 178-6.800.

Sato, Hiro: *See—*
Naito, Shotaro; Kasama, Ryoji; and Sato, Hiro, 3,786,466.

Sato, Hitoshi; Tanaka, Mitsuo; Nakamura, Michiharu; Takahashi, Susumu; and Kurono, Hirokazu, to Hitachi, Ltd. Package for mounting semiconductor device in microstrip line. 3,786,375, Cl. 333-84.00m.

Sato, Isao. Bobbin socket. 3,785,585, Cl. 242-118.310.

Sato, Jinichi; and Kurusu, Tosiro, to Sato Shokuhin Kogyo Kabushiki Kaisha. Process of manufacturing alcohol-containing solid matter. 3,786,159, Cl. 426-302.000.

Sato, Katsuyasu. Fuse-type circuit breaker. 3,786,388, Cl. 337-269.000.

Sato, Naotake: *See—*
Ariyoshi, Yasuo; Nagao, Masanori; Sato, Naotake; Shimizu, Akira; and Kirimura, Jiro, 3,786,039.

Sato, Shigetake: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.

Sato Shokuhin Kogyo Kabushiki Kaisha: *See—*
Sato, Jinichi; and Kurusu, Tosiro, 3,786,159.

Sato, Yukihiro; and Ichinosawa, Toshiju, to Kabushiki Kaisha Daini Seikosha. Programmed signal generating apparatus. 3,786,236, Cl. 235-61.11e.

Sausaman, David K.; and Purcell, Robert F. Method for coating steel. 3,785,855, Cl. 117-75.000.

Sawaki, Tsukasa: *See—*
Kano, Gota; Fujiwara, Shohei; Iizuka, Mutsuo; Hasegawa, Hiromasa; and Sawaki, Tsukasa, 3,786,320.

SCAL, Societe de Conditionnements en Aluminium: *See—*
Roussel, Jean, 3,785,545.

Scanlan, Harry J., to Shoreline Precast Company. Floating factory for the manufacture of building components. 3,785,314, Cl. 114-.50f.

Schacht, Roy Arthur. Single commutation vertical wheel marking machine. 3,785,470, Cl. 197-6.400.

Schaeff, Hans. Multi-bucket excavating machine. 3,785,071, Cl. 37-90.000.

Schaerer, Andre. Method for the fabrication of insulated profile members. 3,786,121, Cl. 264-47.000.

Schafer, Josef, to Telesco Brophey, Limited. Telescopic umbrella. 3,785,388, Cl. 135-20.00r.

Schafet, Hugo W., to Motorola, Inc. Acoustic transducer including piexoelectric driving element. 3,786,202, Cl. 179-110.00a.

Schall, Wallace J.; and Van Horn, Richard F. High pressure portable tube bender. 3,785,190, Cl. 72-149.000.

Schaller, Willard W.; Martin, Ronald C.; and Sixt, Marty E., to Advanced Drainage Systems, Inc. Flexible fittings for corrugated tubing. 3,785,682, Cl. 285-24.000.

Schapp, David I.: *See—*
Sommeria, Marcel R.; and Schapp, David I., 3,786,331.

Schenk, Gerd; and Durhack, Werner, to Varta Aktiengesellschaft. Gastightly closed galvanic element. 3,785,874, Cl. 136-133.000.

Schepotiev, Alexandr Ivanovich: *See—*
Benderovsky, Vladimir Valerianovich; Schepotiev, Alexandr Ivanovich; Yastrebov, Igor Alexandrovich; and Kotenko, Viktoria Mikhailovna, 3,785,589.

Scher, Herbert I.: *See—*
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Schering Corporation: *See—*
Steinman, Martin, 3,786,144.

Schertler, Siegfried, to VAT Aktiengesellschaft fur Vakuum Apparate-Technik. Quick-acting gate valve. 3,785,612, Cl. 251-43.000.

Schiff, Otto M.; and Rikis, Vitolds, to Coleman Systems. Reflex camera view finder. 3,785,270, Cl. 95-11.00v.

Schiffman, Murray M., to Cambridge Research and Development Group. Variable delay line signal processor for sound reproduction. 3,786,195, Cl. 179-15.55t.

Schijf, Johannes, to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer. Pressure gauge. 3,785,209, Cl. 73-395.000.

Schiler, Frederick S., to Portage Machine Company. Statically balanced probe assembly. 3,785,056, Cl. 33-169.00r.

Schindler, Walter: *See—*
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Schinner, Edward N.: *See—*
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Schlafhorst, W., & Co.: *See—*
Kamp, Heinz, 3,785,175.

Schleidt, George Wilhelm, to Tremco Manufacturing Company, The. Bituminous emulsion-rubber latex compositions and method of depositing coagula therefrom. 3,785,852, Cl. 117-105.500.

Schlein, Herbert N.: *See—*
Avtges, James A.; Reid, Jerome L.; Schlein, Herbert N.; and Taylor, Lloyd D., 3,785,815.

Schlumberger Technology Corporation: *See—*
Liu, Olive Y.; and Wahl, John S., 3,786,267.

Schmerling, Louis, to Universal Oil Products Company. Preparation of alkyl substituted unsaturated polybasic acid anhydrides. 3,786,072, Cl. 260-345.900.

Schmerling, Louis; and Vesely, Jerome A., to Universal Oil Products Company. Production of polyalkyl phenols and polyalkyl naphthols by oxidation of polyalkyl benzenes and polyalkyl naphtholenes with $HF\text{-}B_2O_3$. 3,786,098, Cl. 260-586.00b.

Schmidt, Albrecht, to Gesellschaft fur Keinforschung mbH. Closed system neutron generator tube. 3,786,258, Cl. 250-501.000.

Schmidt, Ewald; Brachet, Hansvilli Von; Muller, Rolf; and Kindler, Horst, to Cassella Farbwerke Mainkur Aktiengesellschaft. Process for the preparation of acyl succinc acid dialkyl esters. 3,786,083, Cl. 260-483.000.

Schmidt, Fredericka L.: *See—*
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Rynbrandt, Ronald H.; and Schmidt, Fredericka L., 3,786,157.

Schmidt, George E.; and Schnell, Joseph F., to International Business Machines Corporation. Dynamic address translation reversed. 3,786,427, Cl. 340-172.500.

Schmidt-Kloiber, Heinz; and Schuy, Stefan, to Wolf, Richard, GmbH. Device for destroying stones in the bladder, in the ureter, in the kidneys and the like. 3,785,382, Cl. 128-328.000.

Schmitt, Jack N., to Truswal Systems, Inc. Apparatus and method for making trusses. 3,785,277, Cl. 100-41.000.

Schmitt, Volker; and Valten, Walter, to Brown, Boveri & Cie AG. Multipolar fault current protective switch. 3,786,381, Cl. 335-13.000.

Schmutz, Jean; Hunziker, Fritz; and Kunzle, Franz Martin, to Sandoz-Wander, Inc. 11-Basically substituted dibenz (b,f) (1,4) oxazepine compositions for treating emesis. 3,786,145, Cl. 424-250.000.

Schneider, Carl F.: *See—*
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Schneider, Gordon L. Modular floating structure. 3,785,312, Cl. 114-5.00f.

Schneider, William S.: *See—*
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Schoenewaldt, Erwin F.; and Ihnen, Ernel D., to Merck & Co., Inc. Process for converting (-) reticuline to ( ) salutaridine. 3,785,927, Cl. 195-51.00r.

Schofield, Andrew Noel, to National Research Development Corporation. Hydraulic engineering installations. 3,785,158, Cl. 61-1.000.

Schofield, John Allan; and Delano, Roger Albert, to Union Carbide Corporation. Ternary azeotropic cleaning solution based on tetradich-lorodifluoroethane. 3,785,987, Cl. 252-171.000.

Scholz, Werner, to Ted Bildplatten Aktiengesellschaft AEG-Telefunken. Circuit for producing a three line sequential color television signal. 3,786,178, Cl. 178-5.4cd.

Schoolcraft, Jim F.: *See—*
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Schott, Stuart: *See—*
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Schoumaker, Henry R. P. J., to La Soudure Electrique, Procedes Arcos. Plasma curtain of two or more plasmas. 3,786,306, Cl. 315-111.000.

Schrader, Paul D., to General Electric Company. Room air conditioner frost protection with bimetal control thermostat. 3,785,166, Cl. 62-227.000.

Schrage, Donald J., to Aqua-Chem, Inc. Incinerator. 3,785,305, Cl. 110-8.00a.

Schramm, Eugene Charles, to Bell Telephone Laboratories, Incorporated. Tape transport reel servo system. 3,785,588, Cl. 242-188.000.

Schrepfer, Michael W., to Universal Oil Products Company. Catalytic reforming of a relatively lean charge stock in a two-step process. 3,785,961, Cl. 208-139.000.

Schroeder Brothers Corporation: *See—*
Walters, William C.; and Zabinski, Ronald A., 3,785,734.

Schroeder, Collin H.; Lechnir, Richard J.; Cleveland, Peter G.; Deluca, Hector F.; and Derse, Philip H., to Wisconsin Alumni Research Foundation. 22-Dehydro-25-hydroxychloecalciferol and process for preparing same. 3,786,062, Cl. 260-397.200.

Schuh, Eduard: *See—*
Zimmermann, Hans; Schuh, Eduard; and Kelch, Heinz, 3,786,513.

Schultz, Peter C., to Corning Glass Works. Use of $SiO_2\text{-}Nb_2O_5$ and/or Ta_2O_5 glasses as ultraviolet filters. 3,785,722, Cl. 350-320.000.

Schulz, Hans-Peter: *See—*
Kraemer, Friedrich; Mandel, Jorn; Mayer, Siegfried; Rohrig, Klaus; Schulz, Hans-Peter; Weidenmuller, Hilmar; Haverkamp, Klaus Dieter; and Motz, Jurgen, 3,785,632.

Schulz, Manfred B.; and Holland, Melvin G., to Raytheon Company. Temperature compensated acoustic surface wave device. 3,786,373, Cl. 333-30.00r.

Schutze, Rainer. Harpsichord mechanism. 3,785,237, Cl. 84-258.000.

Schuy, Stefan: *See—*
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Schwarz, Max: *See—*
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Schweitzer, Hans E.; and Huber, Ernst, to Schweitzer, H. E., AG. Composite panel structure. 3,785,098, Cl. 52-663.000.
Schwerin, Siegfried: *See—*
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Schwing, Richard C., to General Motors Corporation. Engine with exhaust reactor arranged for early ignition. 3,785,153, Cl. 60-303.000.
Scoggin, Jack S., to Phillips Petroleum Company. Alkali metal sulfidearylene sulfide polymer. 3,786,035, Cl. 260-79.100.
Scolatti, Charles A.: *See—*
Von Ohain, Hans J. P.; Mills, Roscoe H.; and Scolatti, Charles A., 3,785,593.
Scopacasa, Frederick L. Electric level. 3,786,472, Cl. 340-282.000.
Scott & Fetzer Company, The: *See—*
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Scott, Charles Hamilton. Keypunch acoustic cover. 3,785,452, Cl. 181-33.00k.
Scott, William P., to Continental Oil Company. Low-temperature lubricating greases. 3,785,974, Cl. 252-28.000.
Scozzafava, James Joseph. Combined riser tensioner and drill string heave compensator. 3,785,445, Cl. 175-5.000.
Scruggs, James A.: *See—*
Cianciolo, Alfred D.; Sabatine, Donald J.; Scruggs, James A.; and Trotz, Samuel I., 3,785,890.
Sealed Air Corporation: *See—*
Fielding, Alfred W., 3,785,899.
Seaquist Valve Company: *See—*
Hoening, Kevin J., 3,785,571.
Sebulsky, Raynor T.: *See—*
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Sedlarik, Jaroslav, to Elitex, Zavody textilniho strojirenstvi Generalni reditelstvi. Winding stop motion for textile winding machines. 3,785,581, Cl. 242-39.000.
Seem, Warren A.; Stoddard, Nicholas J.; and Stoddard, Robert W., to Leesona Corporation. Producing torque controlled voluminous set yarns. 3,785,135, Cl. 57-34.0hs.
Seidel, Kenneth L.: *See—*
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Seiko Koki Kabushiki Kaisha: *See—*
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Seipp, Ronald W.; and McClure, Harold E., to Thermo King Corporation. Heat exchanger defrost apparatus. 3,786,227, Cl. 219-201.000.
Seitz, Carl R. Fishing bait sinker. 3,785,078, Cl. 43-43.140.
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Setterquist, Robert Alton, to Du Pont de Nemours, E. I., and Company. Method for preparing random copolymers of formaldehyde and olefin oxide silane and/or vinyl ether silyl. 3,786,027, Cl. 260-67.0fp.
Seulen, Gerhard; and Reinke, Friedhelm, to AEG-Elotherm GmbH. Method of operation when hot straightening elongated workpieces. 3,785,883, Cl. 148-131.000.
Seyd, Gunther: *See—*
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Seymour, William B. Adjustable anchor bolt and block building and leveling means. 3,785,097, Cl. 52-126.000.
Shaffer, Walter M., to Towmotor Corporation. Transverse-traveling load handling vehicle. 3,785,515, Cl. 214-75.00g.
Shakespear, Horacio, to General Motors Corporation. Vehicle suspension system. 3,785,672, Cl. 280-112.00a.
Shakhpazov, Khristofor Sergeevich: *See—*
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Shalit, Harold; and Tomezsko, Edward S. J., to Atlantic Richfield Company. Hydrogen generation. 3,786,138, Cl. 423-698.000.
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Sharapov, Jury Nikolaevich: *See—*
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.
Shaver, Robert G.; and Burton, Joe M., to Atlantic Research Corporation, mesne. Nitrocellulose gas-generating composition containing a polyethylene glycol. 3,785,888, Cl. 149-38.000.
Shea, Edward T., to Reliable Automatic Sprinkler Company, Inc., The. Pressure monitor and transducer. 3,785,440, Cl. 169-20.000.
Shearer, John Marshal, to Leyman Manufacturing Corporation. Coupler device for a cart. 3,785,678, Cl. 280-491.00b.
Sheedy, Patrick T.: *See—*
Koenig, Martin F.; Dempsey, George A., Jr.; and Issa, Manuel, 3,786,394.
Shelby, Richard K.: *See—*
Logomasini, James C.; and Shelby, Richard K., 3,785,761.
Shell Oil Company: *See—*
Birke, August H., 3,785,979.
Hunter, Leon, 3,786,003.
Strang, Aart, 3,785,790.
Van Klinken, Jakob, 3,785,967.
Shen, Tsung-Ying; Ruyle, William V.; Fordice, Michael W.; and Jensen, Norman P., to Merck & Co., Inc. Diphenyl sulfones. 3,786,050, Cl. 260-239.600.
Shepard, Lyman K.; and Zilahy, Zoltan E., to Standard Tool & Manufacturing Co. Nonsynchronous conveyor system. 3,785,031, Cl. 29-200.00a.
Sherlock, Mary Ellen. Removable table covering. 3,785,419, Cl. 150-52.00r.
Sherman, Frederick A., to GTE Information Systems Incorporated. Data transfer apparatus. 3,786,435, Cl. 340-172.500.
Shibata, Motoo; Higashide, Eiji; Hatano, Kazunori; Mizumo, Komei; Asai, Mitsuko; and Muroi, Masayuki, to Takeda Chemical Industries, Ltd. Antibiotic enduracidin and process for the production thereof. 3,786,142, Cl. 424-118.000.
Shiki, Zenya: *See—*
Amagi, Yasuo; Shiki, Zenya; Ohsumi, Yukihiko; and Noguchi, Kazuo, 3,786,134.
Shimanckas, William J., to Outboard Marine Corporation. Combined reverse lock and swivel bracket holding mechanism. 3,785,329, Cl. 115-41.000.
Shimizu, Akira: *See—*
Ariyoshi, Yasuo; Nagao, Masanori; Sato, Naotake; Shimizu, Akira; and Kirimura, Jiro, 3,786,039.
Shimizu, Isamu: *See—*
Inoue, Eiichi; Shimizu, Isamu; Endo, Ichiro; and Kobayashi, Hajime, 3,785,820.
Shimoda, Keitaro; Obama, Isamu; and Kusunose, Takamaro, to Japan Exlan Company Limited. Process for producing acrylic synthetic fibers of non-circular cross-section and with improved sparkle. 3,786,125, Cl. 264-177.00f.
Shimose, Namio: *See—*
Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, 3,785,246.
Ohno, Tadao; Shimose, Namio; and Konomi, Shunzi, 3,785,247.
Shinn, David M., to Autobar Systems Corporation. Dispensing apparatus. 3,785,526, Cl. 222-14.000.
Shira, Jerry P., to Kyoda Plastics, Limited. Integral hinged wiring raceway. 3,786,171, Cl. 174-48.000.
Shockley, Quentin O.: *See—*
Hodshire, James O.; Shockley, Quentin O.; and Crouse, Don E., 3,785,785.
Shope, Leonard L.: *See—*
Binger, Wynn S.; Shope, Leonard L.; and Moey, Glenn W., 3,785,705.
Shoreline Precast Company: *See—*
Scanlan, Harry J., 3,785,314.
Shottenfeld, Richard: *See—*
Abilock, Solomon; and Shottenfeld, Richard, 3,786,265.
Shrader, Terry Monroe, to RCA Corporation. Cathode-ray-tube-yoke platform - yoke combination and method of assembling the combination. 3,786,185, Cl. 178-7.800.
Shure, David M., to Bendix Corporation, The. Holographic system. 3,786,367, Cl. 331-94.50c.
Sibley, Louis F., 1/2 to Gillespie Corporation. Foldable jack and/or baggage carrier for a snow mobile. 3,785,541, Cl. 224-42.080.
Sibley, Louis F., 1/2 to Gillespie Corporation. Vehicle bumper. 3,785,688, Cl. 293-62.000.
Sidebottom, Ronald: *See—*
Price, David Watkin; Sidebottom, Ronald; Briscoe, Murray George; and Moore, Ronald Charles, 3,786,011.
Sidell, Philip A., to McGraw-Edison Company. Synchronous motor. 3,786,291, Cl. 310-162.000.
Siemens Aktiengesellschaft: *See—*
Adelhed, Ter Je Roj Enok, 3,785,683.
Basse, Paul-Werner, 3,786,277.
Baumgartner, Heinrich, 3,786,477.
Bergbauer, Axel; Ploger, Manfred; and Seyd, Gunther, 3,785,291.
Boning, Walter; and Leistner, Werner, 3,786,293.
Heywang, Hermann; and Hoyler, Gerhard, 3,786,224.
Hubner, Klaus, 3,786,326.
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Siemens-Albis AG: *See—*
Hadbavny, Jozef; and Fuglister, Peter, 3,786,371.
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Newton, Emerson H.; Ketteringham, John M.; Sienczyk, John L.; and Isaacson, Calvin M., 3,785,950.
Siewert, Robert M.: *See—*
Pozniak, Donald J.; and Siewert, Robert M., 3,785,152.
Sifre, Gaston: *See—*
Lambert, Andre; Soury, Jean-Pierre; and Sifre, Gaston, 3,785,205.
Sillay, Roy S., to Celanese Corporation. Stable fiber package comprising overlying wraps of a fibrous tape. 3,785,483, Cl. 206-59.00a.
Silverman, Alan, to American Can Company. Method for heat treating a polar, dielectric parison. 3,786,221, Cl. 219-10.570.
Silverwater, Bernard F., to Pall Corporation. Magnetic pressure indicator. 3,785,332, Cl. 116-70.000.
Simon, David Gavin: *See—*
Jennings, James Robert; and Simon, David Gavin, 3,786,032.
Simpro Corporation of America: *See—*
Penick, Ib, 3,785,260.
Simpson, John I.: *See—*
Hogan, Elmer R.; and Simpson, John I., 3,785,007.
Sims, Larry A.: *See—*
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Singer Company, The: *See—*
Ketterer, Stanley J., 3,785,309.
Mecklenborg, Richard A., 3,785,715.
Mischon, Lester, 3,785,174.
Singh, Suman P. N.: *See—*
Hart, Walter C.; and Singh, Suman P. N., 3,785,161.
Sinobad, Dosan, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Brightness control for a color cathode ray tube. 3,786,483, Cl. 340-324.00a.
Sintermetallwerk Krebsoge G.m.b.H.: *See—*
Zapf, Gerhard, 3,785,038.
Sitte, Hellmuth, to Reichert, C., Optische Werke AG. Device for an infinite adjustment of the specimen stroke in microtomes and ultramicrotomes. 3,785,234, Cl. 83-414.000.
Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. G.m.b.H. Heel supporting device of a ski safety binding. 3,785,664, Cl. 280-11.35t.
Sixt, Marty E.: *See—*
Schaller, Willard W.; Martin, Ronald C.; and Sixt, Marty E., 3,785,682.
Skagit Corporation: *See—*
Cheldelin, Lyle O.; and Myhre, Curth, 3,785,504.
Skov, Ebbe R.; Judge, Roderick B.; and Hamphill, Geoffrey, to Grace, W. R., Company. Process for preparing ammonium salts of alkanoic acids. 3,786,086, Cl. 260-540.000.
Skripnik, Ivan Timofeevich: *See—*
Groza, Viktor Filimonovich; Drozdov, Nikolai Ivanovich; Sharapov, Jury Nikolaevich; Garbovitsky-Gordon, Alexandr Iosipovich; Shakhpazov, Khristofor Sergeevich; Filatov, Nikolai Grigorievich; Skripnik, Ivan Timofeevich; Semkin, Alexei Trofimovich; Vasiliev,Vladimir Ivanovich; Judin, Valentin Dmitrievich; Belenky, Evgeny Jurievich; Grigorenko, Anatoly Evgenievich; and Baryshnikov, Gennady Fedorovich, 3,785,139.
Skuin, Petar: *See—*
Hajdu, Johann; Knauft, Guenter; Skuin, Petar; and Vogt, Edwin, 3,786,430.
Skuran, Victor: *See—*
Waite, William; and Skuran, Victor, 3,785,407.
Slimowicz, Chester; and Welch, Walter J., to GAF Corporation. Diazotype materials for blackline images. 3,785,826, Cl. 96-75.000.
Sly, Larry D., to United States of America, Army, mesne. Magnetic thin film memory packaging design. 3,786,444, Cl. 340-174.1fm.
Smith, Albert C. Liquid propulsion apparatus and method of fabrication. 3,785,327, Cl. 115-16.000.
Smith, Allen E.: *See—*
Soldati, Gianluigi; and Smith, Allen E., 3,786,092.
Smith, Arthur W.: *See—*
Collins, Leslie C.; and Smith, Arthur W., 3,785,464.
Smith, Charles L.: *See—*
Minnick, Leonard John; Webster, William C.; and Smith, Charles L., 3,785,840.
Smith, David F. Plaster of Paris bandages to make water-resistant casts. 3,785,373, Cl. 128-91.000.
Smith, David F. Plaster of Paris bandages to make casts of improved strength, water-resistance and physiological properties. 3,785,479, Cl. 206-47.00a.
Smith, Ernest L., to Phillips Petroleum Company. Tray with strengthening member. 3,785,544, Cl. 229-14.0be.
Smith, Gordon: *See—*
Bates, John Joseph; Jackson, Eric Arthur; and Smith, Gordon, 3,786,511.
Smith, Harvey E.: *See—*
Finley, Dewayne W.; Smith, Harvey E.; and Fishwild, Owen L., 3,786,078.
Smith, Howard, Company: *See—*
Smith, Howard F., III, 3,785,409.
Smith, Howard F., III, to Smith, Howard, Company. Clamping apparatus for resistance welding of multiple wires forming a well screen. 3,785,409, Cl. 140-92.200.
Smith, James S.: *See—*
Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D., 3,785,019.
Smith, John A.: *See—*
Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalez, Roger A.; and Smith, John A., 3,785,533.
Smith, John D., to Wellman Industries. Carousel aligning apparatus. 3,785,524, Cl. 221-122.000.
Smith, Joseph B., to Pipe Line Development Company, The. Method for plugging pipe. 3,785,041, Cl. 29-471.300.
Smith, M. Kent. Dice maze puzzle. 3,785,651, Cl. 273-113.000.
Smith, Marvin F., to Esso Research and Engineering Company. Apparatus for testing shear stability of lubricants. 3,785,196, Cl. 73-64.000.
Smith, Raymond Peter, Jr., to Craftmaster, Inc. Oil reclaiming device for removing oil from the surface of water. 3,785,496, Cl. 210-242.000.
Smith, Robert M. Security coupling. 3,785,670, Cl. 280-79.100.
Smith, Roy B.; and Sabo, Alex T., to Moore, Samuel, & Company. Lubricator. 3,785,460, Cl. 184-43.000.
Smith, Walter E. Fret board for guitar. 3,785,239, Cl. 84-314.000.
Smith, Wesley A. Door operator. 3,785,089, Cl. 49-139.000.
Smith, William R., to Cincinnati Milacron Inc. Dispensing shipping container with funnel-type pallet. 3,785,534, Cl. 222-460.000.
Smith-Bergen Manufacturing Corporation: *See—*
Hogan, Elmer R.; and Simpson, John I., 3,785,007.
Smitherman, John B. Pollution control apparatus for smoke emitter. 3,785,126, Cl. 55-228.000.
Smokontrol Corporation of America: *See—*
Burstein, Norman; and Ditzler, Richard C., 3,785,778.
Snider, Harold B., to Thermo-O-Disc Incorporated. Terminal construction. 3,786,398, Cl. 339-95.00r.
Societa' Italiana Resine S.p.A.: *See—*
Ackermann, Jacob; and Radici, Pierino, 3,786,026.
Societe a Responsabilite Limitee dite: MAR-PHA Societe d'Etudes d'Exploitation de Marques: *See—*
Mardiguian, Jean; and Fournier, Pierre, 3,786,060.
Societe Anonyme Antar-Petroles de L'Atlantique: *See—*
Patouillet, Jean, 3,785,953.
Societe Anonyme D.B.A.: *See—*
Tanguy, Christian, 3,785,393.
Societe Anonyme des Etablissements Roure Bertrand Fils & Justin Dukent: *See—*
Teisseire, Paul Jose; and Auger, Bernard, 3,786,075.
Societe Anonyme dite: Stein Industrie: *See—*
Desbordes, Jean, 3,785,576.
Societe Anonyme: Ciments Lafarge: *See—*
Delacroix, George; and Beneytoot, Lucien, 3,785,764.
Societe d'Applications Generales d'Electricite et de Mecanique: *See—*
Berger, Henri, 3,786,459.
Societe des Aciers Fins de l'Est: *See—*
Sartorius, Guy, 3,786,161.
Societe d'Etudes de Machines Speciales S.A.: *See—*
Chambon, Louis Jean, 3,785,285.
Societe d'Etudes Fabrications, Installations et Manutention en Abrege EFIM S.A.: *See—*
Le Jeune, Gwenole Jean-Claude, 3,785,280.
Societe d'Oplique, Precision Electronique et Mechanique-Sopelem: *See—*
Czapek, Andre Louis, 3,785,218.
Societe d'Optique, Precision, Electronique et Mecanique-Sopelem: *See—*
Lardeau, Jacques, 3,785,265.
Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Lambert, Andre; Soury, Jean-Pierre; and Sifre, Gaston, 3,785,205.
Societe Nationale des Poudres et Explosifs: *See—*
Vaganay, Jean; and Ousset, Robert A., 3,785,889.
Sofianek, Joseph C., to General Electric Company. Interleaving-rod type vacuum interrupter having two breaks in series between each pair of rods. 3,786,214, Cl. 200-144.00b.
Soguel, Rene. Watchcase comprising at least a two-piece casing assembly. 3,785,142, Cl. 58-90.00r.
Soldati, Gianluigi; and Smith, Allen E., to Uniroyal, Inc. 3-nitropropionic acid derivatives. 3,786,092, Cl. 260-561.00r.
Soliichuk, Kornei Denisovich: *See—*
Pilat, Izrail Moiseevich; Samoilovich, Anatoly Grigorievich; Soliichuk, Kornei Denisovich; and Osipov, Eduard Vaganovich, 3,785,875.
Sommeria, Marcel R.; and Schapp, David I., to Hyper-Loop, Inc. Digital tracer. 3,786,331, Cl. 318-570.000.
Sommeria, Marcel R., to Hyper-Loop Inc. Digital regulating control for servo system. 3,786,333, Cl. 318-604.000.
Sony Corporation: *See—*
Narahara, Hisaaki; Numakura, Toshihiko; and Watanabe, Yoshimi, 3,786,176.
Tsurushima, Katsuaki, 3,786,193.
Yanagisawa, Yuzuru, 3,786,487.
Sorkin, Sam A., to Teledyne Exploration Company. Sweep signal seismic exploration. 3,786,409, Cl. 340-15.5cc.
Sosalia, Harry, to Royal Industries, Inc., mesne. Hinge construction. 3,785,441, Cl. 172-311.000.
Sosnowski, Patrick: *See—*
Bjorkholm, John Ernst; Shank, Charles Vernon; and Sosnowski, Patrick, 3,786,368.
Soury, Jean-Pierre: *See—*
Lambert, Andre; Soury, Jean-Pierre; and Sifre, Gaston, 3,785,205.

S.p.A. Virginio Rimoldi & C.: *See—*
Marforio, Nerino, 3,785,310.

Spain, Robert J., to Cambridge Memories, Inc. Magnetic thin film shift register having bidirectional transmission elements and alternately-paired block sites. 3,786,451, Cl. 340-174.0fb.

Specht, Donald P.: *See—*
Drexhage, Karl H.; Reynolds, George A.; and Specht, Donald P., 3,786,369.

Special Metals Corporation: *See—*
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Bailey, Ronald E., 3,785,877.

Specialty Products Development Corporation: *See—*
Timmerman, Hubert G., 3,785,149.

Speedrack Inc.: *See—*
Konstant, Anthony N., 3,785,502.

Spees, Arthur T., to Visu-Flex Company. Filing system and elements thereof. 3,785,520, Cl. 220-221.000.

Spence, Wendell, to National Cash Register Company, The. Stored charge transducer. 3,786,495, Cl. 340-365.00c.

Spencer, Gilbert W., to Reynolds, R. J., Tobacco Company. Apparatus for detecting and capturing defective articles. 3,785,487, Cl. 209-82.000.

Spencer, Keith Louis: *See—*
Kittle, Carl Edwin; and Spencer, Keith Louis, 3,785,157.

Sperling, Phillip. Fabric hanging and pleating bracket. 3,785,426, Cl. 160-327.000.

Sperry, Gene, to American Chain & Cable Co., Inc. Automatic lifting device. 3,785,691, Cl. 294-64.00r.

Sperry Rand Corporation: *See—*
Hilburn, Hugh C., 3,786,303.
Kroger, Harry, 3,786,316.
Lonnemo, Kurt R.; and Bergstedt, Jan O., 3,785,398.
Ross, Gerald F.; Matthews, Hugh B.; and Robbins, Kenneth W., 3,786,413.

Spiegelberg, Hans: *See—*
Kyburz, Emilio; and Spiegelberg, Hans, 3,786,095.

Spieldiener, Reinhold; Saiko, Alphons; and Spieldiener, Robert. Braking device for a ski. 3,785,663, Cl. 280-11.13b.

Spieldiener, Robert: *See—*
Spieldiener, Reinhold; Saiko, Alphons; and Spieldiener, Robert, 3,785,663.

Spinner, Georg. Plug fitting for HF transmission lines. 3,786,377, Cl. 333-98.00r.

Spitz, Erich; and Bismuth, Guy, to Thomson-CSF. Small-sized optical correlator. 3,785,736, Cl. 356-71.000.

Staadt, Charles R.: *See—*
Behunin, Gage B.; Cole, Eugene A.; and Staadt, Charles R., 3,785,454.

Staar, Marcel Jules Helene. Selector for apparatus for automatically playing back information. 3,786,475, Cl. 340-324.00a.

Staempfli, Jackie. Maximum level detector. 3,786,464, Cl. 340-245.000.

Stafford, Cleo. Cushion insole for shoes. 3,785,070, Cl. 36-44.000.

Stafford, John: *See—*
Birchall, James Derek; Cassidy, John Edward; Stafford, John; and Last, Anthony Graham Marshall, 3,785,845.

Stafford, Larry O.; Wentworth, William P.; and Melead, James J., to Beloit Corporation. Metering bar. 3,785,340, Cl. 118-101.000.

Stageberg, Wilfred E., to Minnesota Mining and Manufacturing Company. Label applying device. 3,785,909, Cl. 156-541.000.

Stainforth, Thomas Raymond: *See—*
Hanney, Philip Michael; Stainforth, Thomas Raymond; and Bland, William Arthur, 3,785,173.

Stalmach, Charles J., Jr., to LTV Aerospace Corporation. Cooling system, employing heat-expandable means, for an aerodynamically heated vehicle. 3,785,591, Cl. 244-1.0sc.

Stambler, Leon. Validation systems for credit card or the like. 3,786,420, Cl. 340-149.00a.

Stamford Research Institute: *See—*
Macovski, Albert, 3,786,180.

Stamm, David Paul, to Conoflow Europa N.V. Blade joint. 3,785,757, Cl. 418-255.000.

Stanadyne, Inc.: *See—*
Hodgkins, David H., 3,785,970.

Standard Brands, Inc.: *See—*
Finley, Dewayne W.; Smith, Harvey E.; and Fishwild, Owen L., 3,786,078.

Standard Oil Company: *See—*
Cartmell, Robert R., 3,785,782.

Standard Oil Company, The: *See—*
Jones, Arthur L., 3,786,109.
Talsma, Herbert, 3,786,041.

Standard Products Company, The: *See—*
Dallen, John A., 3,785,104.

Standard Tool & Manufacturing Co.: *See—*
Shepard, Lyman K.; and Zilahy, Zoltan E., 3,785,031.

Stanford Research Institute: *See—*
Anbar, Michael; and Berth, William H., 3,786,249.

Stang, Louis G., Jr.: *See—*
Richards, Powell; Susskind, Herbert; and Stang, Louis G., Jr., 3,785,370.

Stang, Peter L.: *See—*
Poole, Donald R.; Stang, Peter L.; and Mars, James E., 3,785,674.

Staples, John, to Mitchel & King Skates Limited. Ice skates. 3,785,662, Cl. 280-11.170.

Stark Brabant N.V.: *See—*
Vertegaal, Jacobus Gerardus, 3,785,284.

Starkey, Charles O.: *See—*
Molaskey, Charles E.; and Starkey, Charles O., 3,785,699.

Starner, Bernard M.: *See—*
King, Larry K.; Knapp, Lester L.; Schoener, Ronald C.; Kloap, Nicholas; Starner, Bernard M.; and Remper, John A., 3,786,135.

Stauffer Chemical Company: *See—*
Teach, Eugene G., 3,786,016.

Steck, Edward James. Support bracket for lanterns and the like. 3,785,604, Cl. 248-231.000.

Steele, Richard C., to Cleveland Twist Drill Company, The, mesne. Rotary indexing machine. 3,785,223, Cl. 74-815.000.

Stefani, Joseph P., to General Electric Company. Pawl and ratchet indexing mechanism for on-off switching. 3,785,215, Cl. 74-142.000.

Steiger, Anton, to Sulzer Brothers Limited. Piston-type machine. 3,785,250, Cl. 92-72.000.

Stein, Jesse J. Direct current motor system. 3,786,287, Cl. 310-46.000.

Stein, Wolfgang J.; and Straniti, Salvatore, to Avco Corporation. Thermal damper for plate type heat exchangers. 3,785,435, Cl. 165-76.000.

Steiner, Paul D.: *See—*
Ludwig, John T.; and Steiner, Paul D., 3,786,383.

Steinitz, Robert, to Driver, Wilbur B., Company. Permanent magnet alloy using molybdenum. 3,785,808, Cl. 75-170.000.

Steinman, Martin, to Schering Corporation. 1-Polyfluoroalkyl benzodiazepines. 3,786,144, Cl. 424-244.000.

Stella, Joseph A.: *See—*
Batter, John F., Jr.; Mason, Paul B.; Stella, Joseph A.; Thomas, Paul W., Jr.; and Wright, Joseph H., 3,785,725.

Stendig, Joseph L.; and Davis, Claude A. Security system. 3,786,502, Cl. 340-416.000.

Stenger, Harvey G.: *See—*
Buonocore, Salvatore; Stenger, Harvey G.; and Privon, George T., 3,785,453.

Stephenson, Michael J.: *See—*
Merriman, James R.; Pashley, John H.; Stephenson, Michael J.; and Dunthorn, David I., 3,785,120.

Sterlicchi, Pasquale J. Jogger ball. 3,785,642, Cl. 272-70.000.

Sterling Drug, Inc.: *See—*
Brundage, R. Pauline; and Lesher, George Y., 3,786,043.

Stewart, Calvin R. Flow control valve for intravenous fluids. 3,785,378, Cl. 128-214.00c.

Stickle, Daniel T. Taco shell machine. 3,785,273, Cl. 99-404.000.

Stock Equipment Company: *See—*
Lasky, Ronald J., 3,786,354.

Stoddard, Nicholas J.: *See—*
Seem, Warren A.; Stoddard, Nicholas J.; and Stoddard, Robert W., 3,785,135.

Stoddard, Robert W.: *See—*
Seem, Warren A.; Stoddard, Nicholas J.; and Stoddard, Robert W., 3,785,135.

Stoeck, Georg: *See—*
Lauer, Karl; Bodka, Heinz-Gunter; and Stoeck, Georg, 3,785,864.

Stoffregen, Gunter. Door check attachment. 3,785,004, Cl. 16-49.000.

Stoltz, James F.: *See—*
Brown, Donald R.; Masopust, Otto I., Jr.; and Stoltz, James F., 3,786,322.

Stone, Leslie F., to Richardson Company, The. Mill apron automatic can filling machine. 3,785,412, Cl. 141-83.000.

Stone, Louis Earl, to Texas Instruments, Incorporated. Epitaxial solution growth of ternary III-V compounds. 3,785,885, Cl. 148-172.000.

Stookey, Kenneth W. Method and apparatus for the thermal reduction of rubber or plastic material. 3,785,304, Cl. 110-8.00r.

Storcel, Joseph A.: *See—*
Kemmer, Harry P.; and Storcel, Joseph A., 3,786,396.

Storck, August, G.m.b.H., Firma: *See—*
Oberwelland, Klaus; and Wiegratz, Siegfried, 3,785,115.

Strand, Robert C.: *See—*
Marion, Donald L.; Hanson, Lawrence R.; and Strand, Robert C., 3,786,012.

Strang, Aart, to Shell Oil Company. Hydrocarbon fuel compositions. 3,785,790, Cl. 44-66.000.

Straniti, Salvatore: *See—*
Stein, Wolfgang J.; and Straniti, Salvatore, 3,785,435.

Strassler, Siegfried: *See—*
Jaecklin, Andre; and Strassler, Siegfried, 3,786,168.

Stratman, James A.: *See—*
Conkle, Ellsworth V., 3,785,695.

Strauber, Hans-Jurgen, to Daimler-Benz Aktiengesellschaft. Internal combustion engine. 3,785,457, Cl. 184-6.500.

Strauss, Edgar H., to Ruti Machinery Works Ltd. Arrangement of movable thread-contacting lamellae on a wave-type loom. 3,785,408, Cl. 139-12.000.

Streander, George W., to Design Systems, Inc. Workpiece edge and corner locating tool. 3,785,057, Cl. 33-169.00r.

Streander, George W., to Design Systems, Inc. Multi-curve generator. 3,785,245, Cl. 90-11.00r.

Strecke, Heinz. Program reading mechanism. 3,786,235, Cl. 235-61.11a.

Strelzoff, Samuel; and Atkin, Sydney, to Chemical Construction Corporation. Production of nitrophosphate fertilizer. 3,785,797, Cl. 71-39.000.

Strickland, Edward T.: *See—*
Amos, Homer C., 3,785,102.
Strohmeyer, William H.: *See—*
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Stroke, George W. Optical aperture synthesis. 3,785,262, Cl. 95-18.000.
Strong, Kline D. Expandable binder. 3,785,740, Cl. 402-29.000.
Strother, Charles W.: *See—*
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Stroucken, Klaus Hans Dieter, to Alfa-Laval AB. Centrifuge with intermittent sludge discharge. 3,785,548, Cl. 233-20.00a.
Studiengesellschaft Kohle mbH: *See—*
Huhn, Horst, 3,786,250.
Stumpf, Karl. Roll train switch. 3,785,469, Cl. 193-36.000.
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Suh, John T.; and Bare, Thomas N., to Colgate-Palmolive Company. Compositions and method employing 1-[4-hydroxy-3-(hydroxymethyl)-phenyl]-1-hydroxy-2 -aralkylaminoethanes. 3,786,154, Cl. 424-282.000.
Suling, Carl Hans: *See—*
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Suzuki, Mitsuaki, to Kabushiki Kaisha Komatsu Seisakusho. Steering system for an endless track type tractor. 3,785,450, Cl. 180-6.700.
Suzuki, Shigeo: *See—*
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Suzuki, Toshio: *See—*
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Swales, Danvers Allin; and Carson, John William, to Albright-Wilson, Limited. Electrocoatable paint containing non-ferromagnetic chromium oxide. 3,786,014, Cl. 260-29.20r.
Swensson, Wallin K. Adjusting mechanism for perpetual calendars. 3,785,076, Cl. 40-335.000.
SWF Plywood Company: *See—*
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Sylvester, Herbert A.; Partridge, Christopher M.; and Goss, Ira D., to Rothmans, Carreras, Limited. Method of treating tobacco. 3,785,384, Cl. 131-121.000.
Symons Corporation: *See—*
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Takano, Hiroshi: *See—*
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Talbot, Richard C.; Ruse, Edward; and Roth, Robert A., to Peters Machinery Company. Hot air sealing apparatus for cartons. 3,785,255, Cl. 93-41.000.
Tallent, L. Bust-developing means. 3,785,369, Cl. 128-40.000.
Talsma, Herbert, to Standard Oil Company, The. Melamine-formaldehyde resin containing alumina hydrate. 3,786,041, Cl. 260-17.300.
Tamborrino, Paul A.: *See—*
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Tanguy, Christian, to Societe Anonyme D.B.A. Fluid power braking and steering system. 3,785,393, Cl. 137-110.000.
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Tanimura, Noboru; Mori, Kenji; and Tanaka, Hirosi, to Asahi Kasei Kogyo Kabushiki Kaisha. Melamine resins for improving surface properties of shaped articles of synthetic resins. 3,785,861, Cl. 117-138.800.
Tanksley, Marcello M. Litter grabbler an handling implement. 3,785,689, Cl. 294-19.00r.
Taponen, Mariti, to Lee, Raymond, Organization, Inc., The. Tree felling device. 3,785,415, Cl. 144-34.00r.
Tarassoff, Peter: *See—*
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Taverner, Clarence I.; and Kleinmann, Earl E., to Phillips Petroleum Company. Apparatus for redirecting flow in a fluid conveying system. 3,785,413, Cl. 141-84.000.
Taylor Deving & Salvage Co., Inc.: *See—*
Banjavich, Mark P.; Morrissey, George R.; and Gaudiano, Anthony V., 3,785,160.
Taylor, Lloyd D.: *See—*
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Taylor, Wesley L., to Powers Regulator Company, The. Pure fluid amplifier. 3,785,390, Cl. 137-13.000.
Teach, Eugene G., to Stauffer Chemical Company. Carbanilate dioxolanes and dioxanes and their utility as herbicides. 3,786,016, Cl 260-340.700.
Teal, Bernard C.: *See—*
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Tecce, Frederick C.; and Dudzik, Chester J., to Leesona Corporation. Apparatus and process for producing torque controlled voluminous set yarn and yarn and fabric produced thereby. 3,785,136, Cl. 57-34.0hs.

Teche, Andre: *See—*
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Technical Management Services, Inc.: *See—*
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Teichmann, Newton N.; McKenna, Chancey D.; and Garrone, Albert, to Teichmann, Henry F., Inc. Reaction vessel. 3,785,780, Cl. 23-285.000.

Teisseire, Paul Jose; and Auger, Bernard, to Societe Anonyme des Etablissements Roure Bertrand Fils & Justin Dukent. Hydroxy ethers having odorant properties. 3,786,075, Cl. 260-611.00f.

Telecommunication Engineering Corporation: *See—*
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Teledyne Exploration Company: *See—*
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Teledyne, Inc.: *See—*
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Telex Computer Products Inc.: *See—*
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Tennessee Valley Authority: *See—*
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Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Sekiya, Hitoshi; Matuo, Hiroto; and Kimata, Shizuo, to Toagosei Chemical Industry Co., Ltd., Sumitomo Light Metal Industries, Ltd. and Dainichiseika Color & Chemicals Mfg. Co. Ltd. Process for electrocoatig aluminum articles. 3,785,946, Cl. 204-181.000.

Terry, Louis E.; and Wilson, Richard W., to Motorola, Inc. Method of forming metallization backing for silicon wafer. 3,785,892, Cl. 156-3.000.

Terry, Rupert Douglas, to Johns-Manville Corporation. Jacket for cylindrical article and method and apparatus for forming said jacket. 3,786,226, Cl. 219-125.00r.

Tesco Chemicals, Inc.: *See—*
Halley, James L., 3,785,971.

Tetenborg, Konrad, to Windmoller & Holscher. Apparatus for forming stacks of flat, apertured workpieces. 3,785,257, Cl. 93-93.0ht.

Tetra Pak International AB: *See—*
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Texaco Inc.: *See—*
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Misenheimer, Reid, 3,785,468.

Tezuka, Kunitoshi. Scrap blocks for electric furnaces. 3,785,784, Cl. 29-186.000.

Theobald, Robert A.: *See—*
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Thermo King Corporation: *See—*
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Thermo-O-Disc Incorporated: *See—*
Snider, Harold B., 3,786,398.

Thiel, Charles J.: *See—*
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Thierfelder, William George, to Bell Telephone Laboratories, Incorporated. Microelectronic circuit package. 3,786,317, Cl. 317-234.000.

Thiffault, Marcel: *See—*
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Thomas, Charles Edgar, Jr., to United States of America, Air Force, mesne. Enhancement and detection of small static object in scene by use of programmed motion of image of scene. 3,786,186, Cl. 178-7.890.

Thomas, Ian M., to Owens-Illinois, Inc. Preparation of ultra-fure compounds corresponding to the formula CAA1204 and MGAL2C4. 3,786,137, Cl. 423-600.000.

Thomas, Klaus: *See—*
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Thomas, Paul W., Jr.: *See—*
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Thomas, Sanford E., Jr., to Dyna-Kool Corporation. Air-conditioning simulation system and method. 3,785,064, Cl. 35-13.000.

Thompson, Roy O.; and Breidenstein, Charles P., to United States of America, Interior. Control of vampire bats. 3,786,153, Cl. 424-281.000.

Thomson, Gwendoline May. Curtain hanging. 3,785,003, Cl. 16-87.200.

Thomson-CSF: *See—*
Croset, Michel; and Velasco, Gonzalo, 3,785,717.
Spitz, Erich; and Bismuth, Guy, 3,785,736.

Throckmorton, Peter E.; and McKillip, William J., to Ashland Oil, Inc. Cyclic organimetallic compounds. 3,786,067, Cl. 260-327.00r.

Thurmond, Fred A., Jr.: *See—*
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Tiedeman, George T.: *See—*
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Timken Company, The: *See—*
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Timmerman, Daniel Maurice: *See—*
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Timmerman, Hubert G., to Specialty Products Development Corporation. Method for filling a bag with water vapor and carbon dioxide gas. 3,785,149, Cl. 60-205.000.

Timofeev, Nikolai Vasilievich: *See—*
Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich, 3,785,869.

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TMC (Canada) Limited: *See—*
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Toagosei Chemical Industry Co., Ltd.: *See—*
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Tobias, James R.: *See—*
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Toepel, Richard R., to General Motors Corporation. Engine with internal charge dilution and method. 3,785,355, Cl. 123-119.00a.

Tokiura, Shohei: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.

Tokuyama, Takashi; and Mori, Takaaki, to Hitachi, Ltd. Method of producing semiconductor devices. 3,785,043, Cl. 29-578.000.

Tomezsko, Edward S. J.: *See—*
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Tope, Rockney A.: *See—*
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Torii, Michihiro: *See—*
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Torresi, Vincenzo N., to Olivetti, Ing. C., & C., S.p.A. Multiplex driving circuit. 3,786,486, Cl. 340-336.000.

Torrington Company, The: *See—*
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Torvfelt, Nils Allan Emanuel, to AB Bahco Ventilation. Electrically heated sauna bath unit. 3,786,231, Cl. 219-365.000.

Toshinai, Akio; and Hase, Takashi, to Dai Nippon Toryo Co., Ltd. Method of preparing phosphors for infrared-to-visible conversion. 3,785,991, Cl. 252-301.600.

Toth, Istvan: *See—*
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Towmotor Corporation: *See—*
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Township, Randolph: *See—*
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Toyen, Gerald L., to General Dynamics Corporation. Digital data storage with equal input and output data rate, but variable memory shift rate. 3,786,440, Cl. 340-173.00r.

Toyo Soda Manufacturing Co., Ltd.: *See—*
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Toyobo Co., Ltd.: *See—*
Furuya, Akio; Hachiboshi, Makoto; Adachi, Toshio; and Uchida, Masakatsu, 3,786,004.

Tracey, Victor Allen: *See—*
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Proctor, Frank Hanslow, 3,786,175.

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Trent, Edward J.; Meyers, Lavern H.; and Kagele, Frank L., to Intercontinental Services, Inc. Game control and data handling system. 3,786,234, Cl. 235-61.70r.
Trombly, John E.; and Bender, Warren G., to Telecommunication Engineering Corporation. Multiplexing circuit. 3,786,473, Cl. 340-311.000.
Trotz, Samuel I.: *See—*
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Trumpler, Theodor. Leg prosthesis with resiliently mounted stump socket. 3,784,988, Cl. 3-18.000.
Truswal Systems, Inc.: *See—*
Schmitt, Jack N., 3,785,277.
TRW Inc.: *See—*
Hayden, Rodney, 3,786,462.
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Tschapek, Gleb: *See—*
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Tsugukuni, Hideyoshi; and Matsuda, Mitsuhiro, to Dai Nippon Toryo Co., Ltd. Polymer dispersion and process for preparation of the same. 3,786,010, Cl. 260-21.000.
Tsurusaki, Yoshiyasu: *See—*
Nagawa, Masatoshi; Suzuki, Yoshio; Matsui, Katsuaki; Iijima, Masaoki; and Tsurusaki, Yoshiyasu, 3,786,147.
Tsurushima, Katsuaki, to Sony Corporation. Four channel decoder with variable mixing of the output channels. 3,786,193, Cl. 179-1.0gq.
Tsygankov, Vladimir Fedorovich: *See—*
Feldshtein, Isaak Yakovlevich; Epifanov, Valery Sergeevich; Tsygankov, Vladimir Fedorovich; Pashkov, Alexandr Nikitovich; Mogilny, Dmitry Gavrilovich; and Yakovlev, Mikhail Vasilievich, 3,785,032.
Tu, George K.: *See—*
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Tucker, Linwood G., to Koppers Company, Inc. Sealing device for coke oven door. 3,785,932, Cl. 202-248.000.
Tucker, Lorn Kenneth, to Coulter Electronics, Inc. Optical scanning device. 3,786,261, Cl. 250-205.000.
Tucker, Stephen F.: *See—*
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Tudor Metal Products Corporation: *See—*
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Tuitt, Milton. Modular paper sculptures. 3,785,066, Cl. 35-72.000.
Turk, Stanley D.: *See—*
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Turner, Hamish. Building panel with latching means. 3,785,103, Cl. 52-309.000.
Turton, Cecil Nigel; and McAinsh, James, to Imperial Chemical Industries Limited. Thermoplastic compositions. 3,785,916, Cl. 161-156.000.
Tuzson, John J.; Hallberg, Irving H.; and Vaughn, James R., to Borg-Warner Corporation. Charge forming apparatus. 3,785,627, Cl. 261-36.00a.
Ube Industries Limited: *See—*
Okuyama, Toru; Muta, Susumu; Sato, Shigetake; Tokiura, Shohei; and Miyasu, Akira, 3,786,006.
UCC Hydraulics, Limited: *See—*
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Ugine Aciers: *See—*
De Cadenet, Jean-Jacques, 3,785,786.
Uhlich, Horst. Agent for preventing seizing-up in zip-fasteners. 3,785,978, Cl. 252-50.000.
Ujiff, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for the manufacture of circular products. 3,785,429, Cl. 164-282.000.
Ulbrich, John K.: *See—*
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Underwood, Raymond D.: *See—*
Phillips, Edward H.; and Underwood, Raymond D., 3,786,335.
Underwriters Safety Device Company: *See—*
Ege, Hans, 3,786,400.
Une, Tatuyuki; and Kamata, Akira, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Kabushiki Kaisha Osaka Jack Seisakusho. Hydraulic jig for correction of mis-alignment between joints of plates. 3,785,030, Cl. 29-200.00p.
Ungar, Israel S.; and Scher, Herbert I., to Esso Research and Engineering Company. Metallic appearing laminate. 3,785,911, Cl. 161-5.000.
Unicorp, Incorporated: *See—*
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Unifoam AG: *See—*
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Van Der Does, Lucas, to N.V. Optische Industrie "De Oude Delft". Device for the delivery, one by one, of pieces of film from a stack. 3,785,637, Cl. 271-24.000.

Van der Lely, Cornelis. Hay making machines. 3,785,133, Cl. 56-370.000.

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Van Handel, Ambrose B. Lining for artificial dentures. 3,785,054, Cl. 32-2.000.

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Vives, Van C., to Phillips Petroleum Company. Process for the preparation of 1,5-hexadiene. 3,786,111, Cl. 260-680.00r.

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von Paesschen, August Jean; Herbots, Joseph Antoine; and Timmerman, Daniel Maurice, to Agfa N.V. Antistatic coating compositions. 3,786,002, Cl. 252-500.000.

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Walther, Gerhard; Bauer, Rudolf; Hubner, Hans-Hugo; and Banholzer, Rolf, to Boehringer Ingelheim G.m.b.H. 1,2,3,6-Tetrahydro-4-pyridylmethyl carboxylates. 3,786,059, Cl. 260-295.00r.

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Watson, Robert E.; and Pitts, Claude L., to Hoscot Limited. Cot frame movable between a prone position and an upright position. 3,784,991, Cl. 5-136.000.

Webb, Eugene E.; and Kopelman, Leo G. Earth movement indicator. 3,786,503, Cl. 340-421.000.

Weber, Ernesto Juan. Condition responsive control device with capacity for independent adjustment of control points. 3,786,212, Cl. 200-83.00r.

Weber, Guy Paul; and Deshayes, Philippe Marie, to La Cellophene. Method and system for varying the positions of image-forming surfaces on an elongate flexible electrophotographic support belt for different runs thereof. 3,785,730, Cl. 355-16.000.

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Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Surbent and process for heavy metal removal from motor fuel. 3,785,968, Cl. 208-251.000.

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Wildhaber, Ernest. Method of and means of generating gear teeth. 3,785,244, Cl. 90-4.000.

Wilgus, Donovan R., to Chevron Research Company. Reaction product of an amine and a hydroperoxidized ethylene/propylene copolymer. 3,785,980, Cl. 255-51.50a.

Wilhelm, Carl F., Jr.: *See—*
Bailey, Gordon B.; and Wilhelm, Carl F., Jr., 3,785,146.

Wilhelm, John R.: *See—*
Dudinec, Emery; and Wilhelm, John R., 3,785,491.

Wilkus, Clarence W.: *See—*
Whyzmuzis, Paul D.; and Wilkus, Clarence W., 3,786,007.

Will, Albert S.; Wolf, Sylvan; and Barnum, William L., to United States of America, Navy. Underwater acoustical detection system. 3,786,403, Cl. 340-2.000.

Will, Gerhard, to Bosch, Robert, G.m.b.H. Electrohydraulic transmission shifting apparatus for a motor car. 3,785,224, Cl. 74-865.000.

Willard, Henry G.: *See—*
Hobson, Charles F., Jr.; and Willard, Henry G., 3,786,311.

William Prym-Werke K.G., Firma: *See—*
Nysten, Bernhard P., 3,785,009.

Willock, James Taylor, to General Foods, Limited. Whippable composition. 3,785,831, Cl. 99-139.000.

Wilson, Duane L. Grain pick up. 3,785,132, Cl. 56-364.000.

Wilson Industries, Inc.: *See—*
Hutchinson, Carl P., 3,785,690.

Wilson, Richard W.: *See—*
Terry, Louis E.; and Wilson, Richard W., 3,785,892.

Wilson, Ronald H.; Blumenfeld, Samuel M.; Redington, Rowland W.; and Rosczak, Joseph S., to General Electric Company. Protective coating for diode array targets. 3,786,294, Cl. 313-65.0ab.

Wilson, William J., to Motorola, Inc. Adaptive transistor switch. 3,786,279, Cl. 307-254.000.

Windamatic Systems, Inc.: *See—*
Eminger, Robert J., 3,785,212.

Windish, Willis L.: *See—*
Butterfield, Max L.; Windish, Willis L.; and Coker, Morton M., 3,785,503.

Windmoller & Holscher: *See—*
Tetenborg, Konrad, 3,785,257.

Winefordner, James D.: *See—*
Browner, Richard F.; Winefordner, James D.; and Glenn, Tom H., 3,786,308.

Winsel, August, to Varta Aktiengesellschaft. Method and apparatus for the removal of carbon dioxide from gas mixtures and fuel cell combination. 3,785,870, Cl. 136-86.00c.

Winston, Emanuel A. Filament actuated vehicle. 3,785,082, Cl. 46-210.000.

Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Locking latch for a disk-pack storage container. 3,785,184, Cl. 70-63.000.

Wisconsin Alumni Research Foundation: *See—*
Schroeder, Collin H.; Lechnir, Richard J.; Cleveland, Peter G.; Deluca, Hector F.; and Derse, Philip H., 3,786,062.

Wismer, Marco: *See—*
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,785,849.

Wisniewski, Leonard. Process for anti-corrosive protection by reduction of ionised metals on metal substrate. 3,785,847, Cl. 117-62.000.

Witzel, Gunter, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Connecting link for antiskid chains for tires. 3,785,422, Cl. 152-241.000.

Wojcik, David S., to Owens-Illinois, Inc. Baker clamped sustainer voltage generator for pulsing discharge display panel. 3,786,485, Cl. 340-324.00m.

Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, to Bayer Aktiengesellschaft. High molecular weight aromatic polyamides having an affinity for basic dyes. 3,786,024, Cl. 260-47.0cz.

Wolf, Heinz K.; and Averbeck, Dean C., to Kysor Industrial Corporation. Adjustable tool holder. 3,785,746, Cl. 408-182.000.

Wolf, Richard, GmbH: *See—*
Schmidt-Kloiber, Heinz; and Schuy, Stefan, 3,785,382.

Wolf, Rudolf Herman, to Tecumseh Products Company. Method of constructing a hermetic compressor discharge tube joint. 3,785,025, Cl. 29-156.40r.

Wolf, Sylvan: *See—*
Will, Albert S.; Wolf, Sylvan; and Barnum, William L., 3,786,403.

Wolff, Lodewijk Reinaerd: *See—*
Van Den Boomgaard, Jan; and Wolff, Lodewijk Reinaerd, 3,785,805.

Wolff, Paul, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Lathe. 3,785,227, Cl. 82-2.000.

Wolford, Lionel T.: *See—*
Dotson, Anderson O., Jr.; Newcombe, Jack; and Wolford, Lionel T., 3,786,023.

Wolverine World Wide, Inc.: *See—*
Egtvedt, Robert B.; and Booth, William M., 3,784,995.

Wolz, Francis T., to Folger Adam Co.; division of Telkee, Inc. Institutional security system. 3,785,187, Cl. 70-264.000.

Womack, William C., to Colspan Environmental Systems, Inc. Cloud seeding system. 3,785,557, Cl. 239-14.000.

Wood, John Frederick Barry: *See—*
Hazelett, Robert William; Hazelett, Richard; and Wood, John Frederick Barry, 3,785,428.

Woods, Thomas C.; and Ray, Robert A., to Beckman Instruments, Inc. Rate analysis system with overrange signal detection circuit for identifying false signals. 3,786,352, Cl. 324-110.000.

Woods, Thomas C., to Beckman Instruments, Inc. Rate analysis system with constant rate detection circuit for identifying linear signals. 3,786,465, Cl. 340-248.00r.

Woods, William E., to Honeywell Information Systems, Inc. Push-pop memory stack having reach down mode and improved means for processing double-word items. 3,786,432, Cl. 340-172.500.

Woodward Governor Company: *See—*
Ahlgren, Joseph Robert, 3,786,488.
Leeson, James L., Jr., 3,785,147.

Worker, George W.; and Waddington, Philip L., to Leonard Concrete Pipe Co., Inc. Apparatus for molding concrete columns. 3,785,607, Cl. 249-48.000.

Worters, Allen J.: *See—*
Graves, William P.; Passavant, Francis C.; and Worters, Allen J., 3,786,476.

Wostl, Wolfgang J.; and Gower, Bobby G., to Atlantic Richfield Company. Automated dispensing system. 3,786,421, Cl. 340-149.00a.

Wrenn, George T., Jr., to Virginia Chemicals Inc. Precharged receiver drier for automobile air conditioning systems. 3,785,164, Cl. 62-129.000.

Wright, H. Dudley: *See—*
Hitchman, Michael L.; Mehl, Wolfgang; and Millot, Jean Pierre, 3,785,948.

Wright, Joseph H.: *See—*
Batter, John F., Jr.; Mason, Paul B.; Stella, Joseph A.; Thomas, Paul W., Jr.; and Wright, Joseph H., 3,785,725.

Wrobel, Gunter: *See—*
Papst, Hermann; Lunde, Hans; and Wrobel, Gunter, 3,786,290.

Wyckoff Company: *See—*
Hudson, Charles D., 3,785,770.

Xerox Corporation: *See—*
La Cagnina, John M.; and Davies, Robert G., 3,785,816.

Yakovlev, Mikhail Vasilievich: *See—*
Feldshtein, Isaak Yakovlevich; Epifanov, Valery Sergeevich; Tsygankov, Vladimir Fedorovich; Pashkov, Alexandr Nikitovich; Mogilny, Dmitry Gavrilovich; and Yakovlev, Mikhail Vasilievich, 3,785,032.

Yamada, Oimachi: *See—*
Yanagawa, Noboyuki; and Yamada, Oimachi, 3,785,732.

Yamada, Yasuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,786,117.

Yamagishi, Hidehisa; Takano, Hiroshi; and Takeuchi, Masao, to Nippon Kokan Kabushiki Kaisha. Method for electrolytically treating the surface of a steel plate with a chromate solution. 3,785,940, Cl. 204-56.00r.

Yamamoto, Akihiro: *See—*
Ogawa, Haruki; Yamamoto, Akihiro; Sugawara, Yutaka; Suzuki, Shigeo; and Takagaki, Yoshio, 3,786,141.

Yamamoto, Mitsuo: *See—*
Ogawa, Heisuke; Yamamoto, Mitsuo; Bando, Seiisaku; and Baba, Osami, 3,786,407.

Yamamoto, Osamu: *See—*
Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsugu; and Kitamura, Saburo, 3,786,254.

Yamamoto, Toshihiko: *See—*
Iwama, Masakuni; Yamamoto, Toshihiko; Inoue, Isaburo; Hanzawa, Teruo; and Endo, Takaya, 3,785,828.

Yamamoto, Yuki. Reversible cooking instrument. 3,785,274, Cl. 99-425.000.

Yamamura Glass Kabushiki Kaisha: *See—*
Yasuhiro, Tomita; and Katsutoshi, Nakayama, 3,785,195.

Yamanouchi Pharmaceutical Company, Ltd.: *See—*

Murakami, Masuo; Kawahara, Shigemi; Inukai, Noriyoshi; Nagand, Noriaki; Iwamoto, Hidenori; and Ida, Hisashi, 3,786,054.

Yamashita, Tadaoki; Yamamoto, Osamu; Oonishi, Hajimu; Kawabata, Hidetsugu; and Kitamura, Saburo, to Matsushita Electric Industrial Co., Ltd. Thermoluminescence dosimeter having a handle. 3,786,254, Cl. 250-483.000.

Yamashita, Yutaka; and Sata, Masami, to Kokusai Kasei Kosha Co., Ltd. Corrosion and scale inhibiting composition. 3,785,988, Cl. 252-181.000.

Yamauchi, Fumio, to Nippon Electric Company, Limited. Information propagation path switching device. 3,786,447, Cl. 340-174.0tf.

Yamauchi, Takashi: *See—*
Kuribayashi, Hiroshi; Takeda, Takehiko; Okada, Yoshio; and Yamauchi, Takashi, 3,786,107.

Yanagawa, Noboyuki; and Yamada, Oimachi, to Ricoh Co., Ltd. Microreader. 3,785,732, Cl. 355-45.000.

Yanagawa, Nobuyuki, to Ricoh Co., Ltd. Information card retrieval apparatus. 3,785,486, Cl. 209-80.500.

Yanagisawa, Yuzuru, to Sony Corporation. Display device. 3,786,487, Cl. 340-336.000.

Yastrebov, Igor Alexandrovich: *See—*
Benderovsky, Vladimir Valerianovich; Schepotiev, Alexandr Ivanovich; Yastrebov, Igor Alexandrovich; and Kotenko, Viktoria Mikhailovna, 3,785,589.

Yasuhiro, Tomita; and Katsutoshi, Nakayama, to Yamamura Glass Kabushiki Kaisha. Apparatus for testing pressure resistance of bottles. 3,785,195, Cl. 73-37.000.

Yasunage, Hidetoshi; Chikatsu, Tatsusuke; Nozaki, Chihiro; and Yoshida, Yoshinori, to Japan Synthetic Rubber Co., Ltd. Process for producing 2-alkyl-substituted 1,3-conjugated diene polymer. 3,786,036, Cl. 260-94.20m.

Yatsurugi, Yoshifumi; Kuratomi, Tatsuo; and Takaishi, Tetsuo. Process for preparing 4,5A zeolite and method for separating mixtures using same. 3,785,122, Cl. 55-75.000.

Yermish, Israel J., to Fenway Machine Co., Inc. Heavy duty nibbler. 3,785,052, Cl. 30-241.000.

Yoda, Takeshi: *See—*
Tada, Yoshiyuki; Ogita, Hideo; and Yoda, Takeshi, 3,785,036.

Yokota, Kozo; Fukase, Yukishige; and Osozawa, Koichiro, to Nippon Yakin Kogyo Company, Limited. Stainless steel with high resistance against corrosion and welding cracks. 3,785,787, Cl. 29-196.100.

Yonezawa, Toyozo, to Sanyo Chemical Company Ltd. Proparation of cooper, compound and product thereof. 3,786,079, Cl. 260-438.100.

York, Robert Kenneth: *See—*
Hetherington, Irvine Keers; Pritchett, Robert Leonard; and York, Robert Kenneth, 3,786,425.

Yosef, Ouziel. Elastic band type exercising device. 3,785,645, Cl. 272-82.000.

Yoshida, Kenichi: *See—*
Kurauchi, Noritaka; Hiraoka, Susumu; Yoshida, Kenichi; and Ohmori, Masaki, 3,786,411.

Yoshida, Yoshinori: *See—*
Yasunage, Hidetoshi; Chikatsu, Tatsusuke; Nozaki, Chihiro; and Yoshida, Yoshinori, 3,786,036.

Yoshii, Hiroshi: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

Yoshikawa, Kanji: *See—*
Nakashio, Seizo; Yoshikawa, Kanji; Takemura, Toshio; and Ota, Kunio, 3,786,105.

Yoshikawa, Tatsumi, to Daiwa Can Co. Ltd. Method for producing a metallic container or can. 3,785,311, Cl. 113-120.00h.

Yoshimoto, Toshio: *See—*
Takamatsu, Tetsuya; Yoshimoto, Toshio; Narumiya, Tsuneaki; Yoshii, Hiroshi; Wakamatsu, Tsuneo; Fukui, Saburo; Kajimoto, Hikokusu; Kawai, Yoichi; Inaba, Yoshinori; and Usui, Katsuyoshi, 3,786,103.

Yother, Floyd G.: *See—*
Rhinehart, Vance E.; Coffelt, James D.; and Yother, Floyd G., 3,785,345.

Young, Robert Gary: *See—*
Phillips, Brian Harry; and Young, Robert Gary, 3,786,415.

Young, Sherwood L.: *See—*
Dixon, Farris L.; and Young, Sherwood L., 3,785,394.

Young, Sherwood L., to American Standard, Inc. Water control valve structure. 3,785,397, Cl. 137-434.000.

Young, William D., Jr.: *See—*
Kronish, Donald P.; and Young, William D., Jr., 3,785,929.

Youtsey, Karl J.: *See—*
Hervert, George L.; Carnahan, Robert D.; and Youtsey, Karl J., 3,785,781.

Yulkowski, Leon, to General Lock Company. Two-piece door knob construction. 3,785,687, Cl. 292-347.000.

Zabinski, Ronald A.: *See—*
Walters, William C.; and Zabinski, Ronald A., 3,785,734.

Zacha, Bonnie D.: *See—*
Zacha, Russell S.; and Zacha, Bonnie D., 3,785,000.

Zacha, Russell S.; and Zacha, Bonnie D. Sponge brush. 3,785,000, Cl. 15-244.00r.

Zaleski, John, to Mallory, P. R., & Co., Inc. Combination reserve cell and housing. 3,785,872, Cl. 136-114.000.

Zapf, Gerhard, to Sintermetallwerk Krebsoge G.m.b.H. Frocess of working a sintered powder metal compact. 3,785,038, Cl. 29-420.500.

Zaramella, Bruno: *See—*
Cardone, Michele; Grandini, Angelo; and Zaramella, Bruno, 3,786,386.

Zdanowski, Richard E., to Rohm & Haas Company. Floor polishing method and article. 3,785,860, Cl. 117-138.8ua.

Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich. Method of anufacturing electrode groups of alkaline accumulators. 3,785,869, Cl. 136-75.000.

Zdarske strojirny a slevarny, Narodni podnik Zdar Nad: *See—*
Kamelander, Ivan, 3,785,282.

Zelinski, Paul A.; and Jones, Leo V., to GTE Automatic Electric Laboratories, Incorporated. Memory expansion arrangement in a central processor. 3,786,436, Cl. 340-172.500.

Ziebka, Bernard M.; and Tamborrino, Paul A., to Dick, A. B., Company. Sheet stacking apparatus for a duplicating machine or the like. 3,785,639, Cl. 274-46.000.

Zilahy, Zoltan E.: *See—*
Shepard, Lyman K.; and Zilahy, Zoltan E., 3,785,031.

Ziliotto, Vittorio: *See—*
Bouchet, Claude; and Ziliotto, Vittorio, 3,786,431.

Zimmerer, Arthur L.; and Anderson, John L., to Lindsay Manufacturing Co. Alignment monitoring system for a self-propelled irrigation system. 3,785,400, Cl. 137-344.000.

Zimmermann, Hans; Schuh, Eduard; and Kelch, Heinz, to Kienzle Apparate GmbH. Recording apparatus for recording on a plurality of tracks. 3,786,513, Cl. 346-62.000.

Zimmermann, Ma r: *See—*
Bratoljic, Tihomir; Waldis, Josef; and Zimmermann, Max, 3,785,923.

Zipf, Fred W., III, to Blessing, Inc. Method of making a disposable draw sheet. 3,785,897, Cl. 156-201.000.

Zirngiebl, Eberhard: *See—*
Matthey, Hermann; Payer, Stefan; and Zirngiebl, Eberhard, 3,785,949.

Zizo, Vladimir Yakovlevich: *See—*
Zdarov, Leonid Sergeevich; Chernoglaskin, Nikolai Sergeevich; Igonin, Nikolai Ivanovich; Zizo, Vladimir Yakovlevich; Karev, Viktor Dmitrievich; Karmanovsky, Stanislav Nikandrovich; Timofeev, Nikolai Vasilievich; and Petrov, Vladimir Dmitrievich, 3,785,869.

Zollweg, Robert J.; Blackham, Kenneth K.; and Burnham, Walter J., to Westinghouse Electric Corporation. Discharge lamp which incorporates cerium and cesium halides and a high mercury loading. 3,786,297, Cl. 313-229.000.

Zuech, Ernest A.; and Crain, Donald L., to Phillips Petroleum Company. Cycloalkylaromatic production. 3,786,106, Cl. 260-668.00r.

Zwickel, Friedrich: *See—*
Boyer, John A.; Ludwig, David P.; and Zwickel, Friedrich, 3,785,903.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JANUARY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brown, Gaylord W., and B. A. Schnepp, to Koehring Co. Compact differential pressure forming machine. Re. 27,881, 1–15–74, Cl. 425—155.

Burnham, Gerald E., Sr., to Thermotics, Inc. Method and apparatus for the degassification of drilling muds. Re. 27,882, 1–15–74, Cl. 55—41.

Esso Research and Engineering Co.: *See*—
Li, Norman N. Re. 27,888.

Fultz, Palmer: *See*—
Vogel, Arthur E., and Fultz. Re. 27,883.

Gates Rubber Co., The: *See*—
Lear, William P. Re. 27,885.

Holbus, Edward. Protective coating for metal surfaces. Re. 27,890, 1–15–74, Cl. 106—10.

Izumihara, Sozo: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

Johnson, Martin R., to Prenihan A.G. Knit garment and method of manufacture. Re. 27,886, 1–15–74, Cl. 66—177.

Kochring Co.: *See*—
Brown, Gaylord W., and Schnepp. Re. 27,881.

Lear, William P., to The Gates Rubber Co. Magnetic tape. Re. 27,885, 1–15–74, Cl. 242—55.19 A.

Li, Norman N., to Esso Research and Engineering Co. Separating hydrocarbons with liquid membranes. Re. 27,888, 1–15–74, Cl. 208—308.

Makino, Kazunosuke: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

Matsushima, Eiichi: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

McGary, Charles W., Jr., and P. L. Smith, to Union Carbide Corp. Esters of phosphorus-containing acid, [halogenated] epoxide and dicarboxylic acid and process for producing same. Re. 27,887, 1–15–74, Cl. 260—952.

Mihic, Wlajko. Toolholder assemblies. Re. 27,884, 1–15–74, Cl. 29—96.

Murata, Yoshio: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

Nagashima, Kiyoji: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

Prenihan A. G.: *See*—
Johnson, Martin R. Re. 27,886.

Sato Kiko Kabushiki Kaisha: *See*—
Sato, Yo, Nagashima, Murata, Makino, Matsushima, and Izumihara. Re. 27,889.

Sato, Yo, K. Nagashima, Y. Murata, K. Makino, E. Matsushima, and S. Izumihara, to Sato Kiko Kabushiki Kaisha. Portable, one-hand-operable labeling machine. Re. 27,889, 1–15–74, Cl. 156—384.

Schnepp, Bradley A.: *See*—
Brown, Gaylord W., and Schnepp. Re. 27,881.

Smith, Percy L.: *See*—
McGary, Charles W., Jr., and Smith. Re. 27,887.

Thermotics, Inc.: *See*—
Burnham, Gerald E., Sr. Re. 27,882.

Union Carbide Corp.: *See*—
McGary, Charles W., Jr., and Smith. Re. 27,887 .

Vogel, Arthur E., and P. Fultz. Suspension system for vehicles. Re. 27,883, 1–15–74, Cl. 280—6.1

LIST OF PLANT PATENTEES

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,438, 1–15–74, Cl. 20.

Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,440, 1–15–74, Cl. 11.

Armstrong Nurseries, Inc.: *See*—
Armstrong, David L. 3,438.
Armstrong, David L. 3,440.

Ball, Geo. J.: *See*—
Fischer, Arnold W. 3,436.
Fischer, Arnold W. 3,441.

Bohls, Allie, to O. S. Gray. Pecan tree. 3,434, 1–15–74, Cl. 31.

Broadmoor Hotel, Inc.: *See*—
Dropinski, Marion M. 3,437.
Dropinski, Marion M. 3,439.

Dropinski, Marion M., to Broadmoor Hotel, Inc. Carnation plant. 3,437, 1–15–74, Cl. 70.

Dropinski, Marion M., to Broadmoor Hotel, Inc. Carnation plant. 3,439, 1–15–74, Cl. 70.

Fischer, Arnold W., to Geo. J. Ball. African violet. 3,436, 1–15–74, Cl. 69.

Fischer, Arnold W., to Geo. J. Ball. African violet plant. 3,441, 1–15–74, Cl. 69.

Fischer, Carl H., to Selected Glads, Inc. Gladiolus. 3,442, 1–15–74, Cl. 85.

Frampton's Nurseries Ltd.: *See*—
Machin, Barrie J. 3,433.
Machin, Barrie J. 3,435.

Gray, O. S.: *See*—
Bohls, Allie. 3,434.

Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant. 3,433, 1–15–74, Cl. 82.

Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant. 3,435, 1–15–74, Cl. 81.

Selected Glads, Inc.: *See*—
Fischer, Carl H. 3,442.

LIST OF DESIGN PATENTEES

AMP Inc.: *See*—
Irie, Norimitsu. 229,940.

Adams, Paul E.: *See*—
Widgren, Harvey L., and Adams. 229,986.

Adamson, Gerald J., J. W. Kuypers, and I. F. Norton, to Don Mills Developments Ltd. Post drop box. 229,981, 1–15–74, Cl. D74—9.

Airborne S.A.: *See*—
Bernard, Charles. 229,879.

Ament, Herman. Seam ripper. 229,877, 1–15–74, Cl. D3—19.

Amussen, Francis S.: *See*—
O'Brien, Robert F., and Amussen. 229,987.

Ando, Minoru: *See*—
Sugihara, Osamu, Nakamura, and Ando. 229,970.

Arctic Pac, Inc.: *See*—
Schmit, Justin M. 229,919.

Artner, Marcus M., and P. D. McGee, to Motorola, Inc. Tape player or similar article. 229,943, 1–15–74, Cl. D26—14.

Barash, Marshall J., to The Coca-Cola Co. Bottle. 229,891, 1–15–74, Cl. D9—160.

Bemel, Milton M., 50% to Warren F. B. Lindsley. Combined bay and information containing pocket. 229,896, 1–15–74, Cl. D9—249.

Bernard, Charles, to Airborne S.A. Seat or similar article. 229,879, 1–15–74, Cl. D6—66.

Bernard, James E., to Richard W. Whitlaw. Pipe reamer and tamper. 229,983, 1–15–74, Cl. D85—7.

Best, John H., & Sons, Inc.: *See*—
Best, Leon H., and Davis. 229,910.

Best, Leon H., and R.D. Davis, to John H. Best & Sons, Inc. Display stand for carpet samples and the like. 229,910, 1–15–74, Cl. D6—139.

Bishaf, Morris, and L. Messineo. Frame for children's bicycle seat. 229,922, 1–15–74, Cl. D12—119.

Blood, Ernest R., R. W. Lichti, and J. A. Pierson, to Caterpillar Tractor Co. Bucket hook. 229,887, 1–15–74, Cl. D8—232.

Bombardier Ltd.: *See*—
Lepointe, Y. Anselme, and Scott. 229,928.

Box, Theodor M. Poultry transport case. 229,948. 1–15–74, Cl. D30—1.

Bradford, Eugenia. Place mat. 229,912, 1–15–74, Cl. D6—271.

Bradford, Eugenia. Place mat and napkin set. 229,913. 1–15–74. Cl. D6—271.

Bradford, Eugenia. Place mat. 229,915, 1–15–74. Cl. D6—271.

Brody, Howard L., to General Foods Corp. Jar. 229,889, 1–15–74, Cl. D9—44.

Brooks, Paul E. Hair styling comb. 229,984, 1–15–74, Cl. D86—8.

Brotherton, Cecil D.: *See*—
Schuster, Gordon L., and Brotherton. 229,957.

Brown, C. Douglas. Building. 229,924, 1–15–74, Cl. D13—1.
Bunn-O-Matic Corp.: *See*—
Martin, John C. 229,897.
Caterpillar Tractor Co.: *See*—
Blood, Ernest Roy, Lichti, and Pierson. 229,887.
Ceniceros, Robert C. Oral hygiene device. 229,903, 1–15–74, Cl. D4—24.
Christie, Cornelius W., Jr., to General Electric Co. Clock radio. 229,959, 1–15–74, Cl. D42—7.
Coca-Cola Co., The: *See*—
Barash, Marshall J. 229,891.
Columbia Broadcasting Systems, Inc.: *See*—
Vennola, Jorma. 229,952.
Vennola, Jorma, and Korpijaakko. 229,955.
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Curran, Frank J. Ventilated container for air freshner. 229,939. 1–15–74, Cl. D23—150.
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Schuster, Gordon L., and C. D. Brotherton, to Timesavers, Inc. Wide belt sanding machine. 229,957, 1–15–74, Cl. D37—1.
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Snyder, Robert A. Stone polishing machine. 229,956, 1–15–74, Cl. D37—1.
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CLASSIFICATION OF PATENTS

ISSUED JANUARY 15, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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68	3,785,185
240	3,785,186
264	3,785,187
276	3,785,188

CLASS 71

28	3,785,796
39	3,785,797
79	3,785,798
90	3,785,799
92	3,785,800

CLASS 72

78	3,785,189
149	3,785,190
181	3,785,191
319	3,785,192
393	3,785,193
405	3,785,194

CLASS 73

37	3,785,195
64	3,785,196
65	3,785,197
78	3,785,198
104	3,785,199
134	3,785,216
151	3,785,200
151.5	3,785,202
169	3,785,201
170A	3,785,203
198	3,785,205
212	3,785,206
362AR	3,785,207
368.4	3,785,208
395	3,785,209
459	3,785,210
480	3,785,211

CLASS 74

23	3,785,212
60	3,785,213
89.21	3,785,214
142	3,785,215
217B	3,785,219
230.3	3,785,217
242.1FP	3,785,220
242.11P	3,785,221
479	3,785,218
561	3,785,222
815	3,785,223
865	3,785,224

CLASS 75

.5BC	3,785,801
26	3,785,802
121	3,785,803
126D	3,785,804
130.5	3,785,805
134H	3,785,806
138	3,785,807
170	3,785,808
171	3,785,809
173A	3,785,810
178A	3,785,811

CLASS 81

3.1R	3,785,225
119	3,785,226

CLASS 82

2	3,785,227
36B	3,785,228

CLASS 83

6	3,785,229
58	3,785,230
103	3,785,231
156	3,785,232
167	3,785,233
414	3,785,234
557	3,785,235
685	3,785,236

CLASS 84

1.01	3,786,166
1.16	3,786,167
258	3,785,237
312	3,785,238
314	3,785,239
485	3,785,240

CLASS 85

71	3,785,241

CLASS 89

33CA	3,785,242
149	3,785,243

CLASS 90

4	3,785,244
11C	3,785,246
11R	3,785,245
15	3,785,247

CLASS 91

6	3,785,248
41	3,785,249

CLASS 92

72	3,785,250
98R	3,785,251
161	3,785,252
181	3,785,253

CLASS 93

36.01	3,785,254
41	3,785,255
93HT	3,785,257
93C	3,785,256

CLASS 95

4.5	3,785,258
10CT	3,785,259
11U	3,785,270
11.5R	3,785,260
12	3,785,261
18R	3,785,262
39	3,785,263
55	3,785,264
64R	3,785,265
	3,785,266
89L	3,785,267
89R	3,785,268
94R	3,785,269

CLASS 96

1.2	3,785,812
1.3	3,785,816
3	3,785,813
	3,785,814
	3,785,815
28	3,785,817
33	3,785,818
46	3,785,819
48R	3,785,820
49	3,785,821
66R	3,785,824
66.3	3,785,822
	3,785,823
75	3,785,825
	3,785,826
84R	3,785,827
100	3,785,828
	3,785,829
114.1	3,785,830

CLASS 98

40DL	3,785,271
40D	3,785,272

CLASS 99

139	3,785,831
404	3,785,273
425	3,785,274
446	3,785,275
516	3,785,276

CLASS 100

41	3,785,277
51	3,785,278
93P	3,785,279
100	3,785,280
116	3,785,281
257	3,785,282

CLASS 101

93C	3,785,283
118	3,785,284
148	3,785,285
155	3,785,286
247	3,785,287
348	3,785,288
450	3,785,289

CLASS 102

4	3,785,290
24R	3,785,291
70.2R	3,785,292
92.7	3,785,293

CLASS 104

130	3,785,294
155	3,785,295
202	3,785,296

CLASS 105

112	3,785,297
218R	3,785,298

CLASS 106

10	Re.27,890
35	3,785,832
39.6	3,785,833
	3,785,834
47Q	3,785,835
50	3,785,836
52	3,785,837
55	3,785,838
90	3,785,839
118	3,785,840
186	3,785,841
288B	3,785,842
288Q	3,785,843
314	3,785,844

CLASS 108

11	3,785,299
44	3,785,300
109	3,785,301

CLASS 110

8A	3,785,305
8C	3,785,302
8R	3,785,303
	3,785,304
14	3,785,306

CLASS 112

121.27	3,785,307
218R	3,785,308
254	3,785,309
256	3,785,310

CLASS 113

120H	3,785,311

CLASS 114

.5F	3,785,312
	3,785,314
.5T	3,785,313
40	3,785,315
43.5	3,785,316
61	3,785,317
66.5H	3,785,319
74A	3,785,318
	3,785,320
74R	3,785,321
201R	3,785,322
210	3,785,323
235A	3,785,324

CLASS 115

1R	3,785,325
7	3,785,326
16	3,785,327
17	3,785,328

41 3,785,329
70 3,785,330

CLASS 116

63R 3,785,331
70 3,785,332
3,785,333
106 3,785,334
112 3,785,335
114R 3,785,337
114.5 3,785,336
125 3,785,338
129R 3,785,339

CLASS 117

15 3,785,845
17.5 3,785,846
54 3,785,851
62 3,785,847
73 3,785,848
75 3,785,855
3,785,856
93.31 3,785,849
3,785,850
105.5 3,785,852
106 3,785,853
107.2P 3,785,854
124B 3,785,857
136 3,785,858
3,785,859
138.8UA 3,785,860
138.8B 3,785,861
217 3,785,862

CLASS 118

101 3,785,340
421 3,785,341

CLASS 119

5 3,785,342
17 3,785,343
3,785,344
18 3,785,345
27 3,785,346
29 3,785,347
62 3,785,348
82 3,785,349

CLASS 122

115 3,785,350
379 3,785,351

CLASS 123

8.13 3,785,352
32EA 3,785,353
3,785,354
119A 3,785,355
148E 3,785,356
195R 3,785,357

CLASS 124

1 3,785,358

CLASS 126

19.5 3,785,359
30 3,785,360
39J 3,785,364
41R 3,785,361
208 3,785,362
350R 3,785,363
400 3,785,365

CLASS 127

9 3,785,863
46A 3,785,864
55 3,785,865

CLASS 128

2B 3,785,366
2F 3,785,367
2.08 3,785,370
2.1Z 3,785,368
40 3,785,369
77 3,785,371
80C 3,785,372
82 3,785,374
82.1 3,785,375
91 3,785,373
130 3,785,376
188 3,785,377
214C 3,785,378
218M 3,785,379
276 3,785,380
323 3,785,381
328 3,785,382
414 3,785,383

CLASS 131

121 3,785,384
140P 3,785,385

CLASS 133

3D 3,785,386

CLASS 134

3 3,785,866
95 3,785,387

CLASS 135

20R 3,785,388

CLASS 136

6R 3,785,867
30 3,785,868
75 3,785,869
86C 3,785,870
100M 3,785,871
114 3,785,872
3,785,873
133 3,785,874
205 3,785,875

CLASS 137

1 3,785,389
13 3,785,390
110 3,785,393
117 3,785,392
119 3,785,391
218 3,785,394
223 3,785,395
305 3,785,399
344 3,785,400
359 3,785,396
434 3,785,397
488 3,785,398
493.2 3,785,401
561A 3,785,402
608 3,785,403
614 3,785,404

CLASS 138

39 3,785,405
103 3,785,406
108 3,785,407

CLASS 139

12 3,785,408

CLASS 140

92.2 3,785,409

CLASS 141

10 3,785,410
18 3,785,411
83 3,785,412
84 3,785,413
114 3,785,414

CLASS 144

34R 3,785,415
116 3,785,416
221 3,785,417

CLASS 148

2 3,785,876
3,785,877
18 3,785,878
27 3,785,879
31.55 3,785,880
103 3,785,881
113 3,785,882
131 3,785,883
171 3,785,884
172 3,785,885
175 3,785,886

CLASS 149

19 3,785,887
38 3,785,888
92 3,785,889
109 3,785,890

CLASS 150

52R 3,785,418
3,785,419

CLASS 151

37 3,785,420
41.75 3,785,421

CLASS 152

241 3,785,422
361R 3,785,423

CLASS 156

3 3,785,891
3,785,892
89 3,785,895
97 3,785,896
198 3,785,893
201 3,785,897
209 3,785,899
245 3,785,900
351 3,785,902
353 3,785,898
356 3,785,903
384 Re.27,889
400 3,785,905
415 3,785,894
435 3,785,906
441 3,785,904
443 3,785,907
479 3,785,908
527 3,785,901
541 3,785,909
580 3,785,910

CLASS 157

1.1 3,785,424

CLASS 159

11 3,785,425

CLASS 160

327 3,785,426

CLASS 161

5 3,785,911
6 3,785,912
41 3,785,913
133 3,785,914
150 3,785,915
156 3,785,916
161 3,785,917
169 3,785,918
175 3,785,919

CLASS 162

19 3,785,920
168 3,785,921
299 3,785,922

CLASS 164

154 3,785,427
278 3,785,428
282 3,785,429

CLASS 165

1 3,785,430
9 3,785,431
22 3,785,432
27 3,785,433
29 3,785,434
76 3,785,435

CLASS 166

120 3,785,436
281 3,785,437
295 3,785,438

CLASS 169

2A 3,785,439
20 3,785,440

CLASS 172

311 3,785,441

CLASS 173

12 3,785,442
48 3,785,443
78 3,785,444
194M 3,785,204

CLASS 174

15R 3,786,168
28 3,786,169
3,786,170
3,786,174
48 3,786,171
68.5 3,786,172
88S 3,786,173
211 3,786,175

CLASS 175

5 3,785,445
50 3,785,446

CLASS 176

36R 3,785,923
61 3,785,924
87 3,785,925

CLASS 177

119 3,785,447

CLASS 178

5.4BT 3,786,177
5.4CD 3,786,176
3,786,178
5.4SD 3,786,179
6.5 3,786,180
6.7A 3,786,182
6.8 3,786,181
3,786,183
7.2 3,786,184
7.8 3,786,185
7.89 3,786,186
69A 3,786,187

CLASS 179

1GQ 3,786,193
1SA 3,786,188
2DP 3,786,190
6R 3,786,189
3,786,191
15AQ 3,786,192
15.55T 3,786,195
18AD 3,786,194
18DA 3,786,196
18EB 3,786,197
27FH 3,786,198
41A 3,786,199
81B 3,786,200
100.2R 3,786,201
110A 3,786,202
146R 3,786,203

CLASS 180

5R 3,785,448
6.48 3,785,449
6.7 3,785,450
69.1 3,785,451

CLASS 181

33K 3,785,452
36R 3,785,453

CLASS 182

14 3,785,454
22 3,785,455

CLASS 184

6R 3,785,456
6.12 3,785,458
6.5 3,785,457
3,785,459
43 3,785,460
55A 3,785,461

CLASS 187

18 3,785,462
29R 3,785,463

CLASS 191

12.2R 3,785,464
48 3,786,204

CLASS 192

48.5 3,785,465
89B 3,785,466

CLASS 193

35MD 3,785,468
35A 3,785,467
36 3,785,469

CLASS 195

28N 3,785,926
51R 3,785,927
100 3,785,929
127 3,785,930
140 3,785,928

CLASS 197

6.4 3,785,470
63 3,785,471

CLASS 198

33AC 3,785,473
38 3,785,474
41 3,785,475
171 3,785,472
189 3,785,476
218 3,785,477

CLASS 200

5A 3,786,205
16D 3,786,206
51R 3,786,208
61.86 3,786,207
67C 3,786,209
81.4 3,786,210
83R 3,786,212
83T 3,786,211
83Z 3,786,218
144B 3,786,214
144C 3,786,213
148A 3,786,215
148D 3,786,216
214 3,786,217

CLASS 202

234 3,785,931
248 3,785,932
263 3,785,933
3,785,934

CLASS 203

20 3,785,935

CLASS 204

15 3,785,937
16 3,785,938
38A 3,785,936
43S 3,785,939
56R 3,785,940
67 3,785,941
99 3,785,942
100 3,785,943
107 3,785,944
129.95 3,785,945
181 3,785,946
195P 3,785,948
195S 3,785,947
219 3,785,949
228 3,785,954
239 3,785,950
268 3,785,951
297W 3,785,952

CLASS 206

45.31 3,785,478
47A 3,785,479
3,785,481
47R 3,785,480
53 3,785,482
59A 3,785,483
65C 3,785,484

CLASS 208

49 3,785,953
3,785,957
80 3,785,955
87 3,785,958
93 3,785,956
120 3,785,959
135 3,785,960
139 3,785,961
164 3,785,962
171 3,785,963
191 3,785,964
208M 3,785,965
213 3,785,966
216 3,785,967
251R 3,785,968
308 Re.27,888

CLASS 209

75 3,785,485
80.5 3,785,486
82 3,785,487
167 3,785,488
211 3,785,489

CLASS 210

19 3,785,969
23 3,785,970
40 3,785,972
64 3,785,971
109 3,785,490
130 3,785,491
149 3,785,492
169 3,785,493
3,785,494
210 3,785,495
242 3,785,496
282 3,785,497
351 3,785,498

CLASS 211

4 3,785,499
5 3,785,500
7 3,785,501
134 3,785,502

CLASS 212

8B 3,785,503
84 3,785,504
144 3,785,505

CLASS 214

1BH 3,785,507
1P 3,785,506
6M 3,785,508
8.5H 3,785,509
11C 3,785,510
14 3,785,511
17D 3,785,512
18.22 3,785,513
38R 3,785,514
75G 3,785,515
152 3,785,516
450 3,785,517
454 3,785,518

CLASS 215

46A 3,785,519

CLASS 219

10.49 3,786,219
3,786,220
3,786,222
10.57 3,786,221
69V 3,786,223
121LM 3,786,224
124 3,786,225
125R 3,786,226
201 3,786,227
233 3,786,228
241 3,786,229
343 3,786,233
345 3,786,230
365 3,786,231
3,786,232

CLASS 220

22.1 3,785,520
22.3 3,785,521
54 3,785,522

CLASS 221

42 3,785,523
122 3,785,524
265 3,785,525

CLASS 222

14 3,785,526
56 3,785,527
148 3,785,528
161 3,785,529
193 3,785,530
3,785,531
207 3,785,532
327 3,785,533
331 3,785,535
402.21 3,785,536
460 3,785,534
464 3,785,537
490 3,785,538
552 3,785,539
559 3,785,540

CLASS 224

42.08 3,785,541

CLASS 226

22 3,785,542
188 3,785,543

CLASS 229

14BE 3,785,544
51DB 3,785,545
53 3,785,546
62.5 3,785,547

CLASS 233

20A 3,785,548
23R 3,785,549

CLASS 235

50R 3,785,550
61.11A 3,786,235
61.11E 3,786,236
3,786,237
3,786,238
61.7R 3,786,234
80 3,785,553
92PE 3,786,239
95 3,785,551
98R 3,785,552
132R 3,786,240
183 3,786,241
184 3,786,242

CLASS 236

34 3,785,554
53 3,785,555

CLASS 239

6 3,785,556
14 3,785,557
16 3,785,558
17 3,785,559
3,785,560
60 3,785,561
92 3,785,562
172 3,785,564
183 3,785,563
206 3,785,565
259 3,785,566
265.39 3,785,567
310 3,785,568
337 3,785,569
401 3,785,570
492 3,785,571
518 3,785,572
658 3,785,573

CLASS 240

1.3 3,786,247
1.4 3,786,243
3,786,244
2AD 3,786,245
6.4R 3,786,246
25 3,786,248

CLASS 241

15 3,785,574
33 3,785,575
57 3,785,576
3,785,577
202 3,785,578
282.1 3,785,579

CLASS 242

7.05B 3,785,580
3,785,583
39 3,785,581
3,785,582
55.19A Re.27,885
118.31 3,785,585
118.6 3,785,584
159 3,785,587
188 3,785,588
201 3,785,586
3,785,589

CLASS 244

1SA 3,785,595
1SC 3,785,591
1SS 3,785,590
12C 3,785,592
12R 3,785,593
42DA 3,785,594
83R 3,785,596
151A 3,785,597

CLASS 248

58 3,785,598
117.2 3,785,599
119R 3,785,601
188.1 3,785,600
214 3,785,602
225 3,785,603
231 3,785,604
455 3,785,605

CLASS 249

3 3,785,606
48 3,785,607
161 3,785,608
197 3,785,609
214 3,785,610

CLASS 250

83.3R 3,786,257
205 3,786,261
206 3,786,262
209 3,786,263
214R 3,786,264
222R 3,786,266
256 3,786,267
283 3,786,249
302 3,786,255
306 3,786,268
315 3,786,252
328 3,786,259
334 3,786,269
360 3,786,253
385 3,786,270
390 3,786,251
391 3,786,256
398 3,786,271
429 3,786,250
483 3,786,254
501 3,786,258
518 3,786,260
562 3,786,265

CLASS 251

25 3,785,611
43 3,785,612
56 3,785,613
63 3,785,614
74 3,785,615

121 3,785,616
CLASS 252
8.8 3,785,973
28 3,785,974
32.5 3,785,975
33 3,785,976
33.6 3,785,977
50 3,785,978
51.5A 3,785,979
3,785,980
3,785,981
3,785,982
62.1 3,785,983
99 3,785,984
106 3,785,985
136 3,785,986
171 3,785,987
181 3,785,988
301.1R 3,785,990
301.2R 3,785,989
301.4R 3,785,992
301.6R 3,785,991
356 3,785,993
372 3,785,994
400R 3,785,995
415 3,785,996
426 3,785,997
441 3,785,999
464 3,786,000
3,786,001
477R 3,785,998
500 3,786,002
551 3,786,003
CLASS 254
1 3,785,617
94 3,785,618
CLASS 256
10 3,785,619
CLASS 259
4 3,785,620
102 3,785,621
176 3,785,622
185 3,785,623
CLASS 260
2.5AC 3,786,005
2.5N 3,786,004
3,786,006
17.3 3,786,041
18N 3,786,007
21 3,786,010
22CB 3,786,011
23H 3,786,008
23.7M 3,786,009
28.5R 3,786,013
28.5 3,786,012
29.2R 3,786,014
32.6PQ 3,786,018
32.8SB 3,786,015
37EP 3,786,019
38 3,786,017
41A 3,786,020
41.5A 3,786,087
45.75B 3,786,023
45.75N 3,786,021
47CZ 3,786,024
47C 3,786,022
51.5 3,786,025
67FP 3,786,026
3,786,027
75NC 3,786,029
75N 3,786,028
77.5AQ 3,786,031
3,786,034
77.5NC 3,786,030
79.1 3,786,035
91.7 3,786,032
94.2M 3,786,036
97.5 3,786,037
112.5 3,786,038
3,786,039
162 3,786,040
176 3,786,042
239D 3,786,045
239.1 3,786,049
239.3D 3,786,051
239.6 3,786,048
3,786,050
240R 3,786,046
3,786,052
240.8 3,786,047
249.8 3,786,053
283P 3,786,055
285 3,786,054
293.56 3,786,056
293.61 3,786,057
294.8R 3,786,058
295R 3,786,059
295.5B 3,786,043
295.5R 3,786,044
3,786,060
296R 3,786,061
306.5 3,786,063
307D 3,786,064
310R 3,786,065
327R 3,786,066
3,786,067
339.6 3,786,073
340.5 3,786,068
340.7 3,786,016
343.2R 3,786,070
343.6 3,786,069
345.2 3,786,071
345.9 3,786,072
380 3,786,074
397.2 3,786,062
402.5 3,786,076
408 3,786,077
412.4 3,786,078
438.1 3,786,079
448A 3,786,080
471C 3,786,081
483 3,786,082
3,786,083
491 3,786,084
515R 3,786,085
537R 3,786,096
540 3,786,086
545R 3,786,088
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561R 3,786,092
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600	3,786,137	244	3,786,144	270	3,786,150	305	3,786,156	207	3,785,760		CLASS 432
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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*